

## **APPENDIX A**

### **NATURAL EVENTS POLICY AND SUPPORTING BACKGROUND DOCUMENTS**

EPA MEMORANDUM CONCERNING THE NATURAL EVENTS POLICY

DOÑA ANA COUNTY NEAP - NOVEMBER 25, 1997

RESPONSE LETTER FROM EPA - FEBRUARY 23, 1998

NEAP ADDENDUM - APRIL 3, 1998

US EPA NATURAL EVENTS POLICY MEMO

**(original dated May 30, 1996)**

MEMORANDUM

SUBJECT: Areas Affected by PM-10 Natural Events

FROM: Mary D. Nichols  
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TO: Director, Air, Pesticides and Toxics Management  
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Region III  
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Purpose

This memorandum sets forth the Environmental Protection Agency's (EPA's) policy for protecting public health in areas where the PM-10 (particulate matter having a nominal aerodynamic diameter less than or equal to 10 microns) national ambient air quality standards (NAAQS) are violated due to natural events. This policy will be followed in implementing the PM-10 NAAQS until it is superseded.<sup>1</sup> The need for revisions to this policy will be considered by EPA, State agencies and the Federal

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<sup>1</sup>This document contains EPA policy and, therefore, does not establish or affect legal rights or obligations. It does not establish a binding norm and it is not finally determinative of the issues addressed. In applying this policy in any particular case, the EPA will consider its applicability to the specific facts of that case, the underlying validity of the interpretations set forth in this memorandum, and any other relevant considerations, including any that may be required under applicable law and regulations.

Advisory Committee Act's Particulate Matter/Ozone/Regional Haze Subcommittee if the NAAQS for particulate matter are revised.

Three categories of natural events have been identified as affecting the PM-10 NAAQS: (1) volcanic and seismic activity, (2) wildland fires, and (3) high wind events. These PM-10 natural events are defined further below. If other significant categories of natural events are identified, they may be added to this policy in the future.<sup>2</sup>

### **Background**

Prior to the 1990 Clean Air Act Amendments (Act), the Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events (exceptional events guideline) and Appendix K to 40 CFR, part 50, were issued by EPA to address, in part, the situation where natural sources strongly influence an area's PM-10 air quality. To avoid imposing potentially unreasonable State implementation plan (SIP) requirements on such areas, EPA provided for the exclusion of certain natural source data from nonattainment determinations. Thus, Appendix K provides, in part, that measured exceedances of the PM-10 NAAQS in an area may be discounted from decisions regarding nonattainment status if the data are shown to be influenced by uncontrollable events caused by natural sources of particulate matter. The 1986 exceptional events guideline contains EPA's guidance regarding the process States should follow when dealing with PM-10 air quality data that may be eligible for the adjustments authorized under section 2.4 of Appendix K.

Subsequently, the Act added section 188(f) which provides EPA with discretionary statutory authority to waive either a specific attainment date or certain planning requirements for serious PM-10 nonattainment areas that are impacted significantly by nonanthropogenic sources. The EPA states in current PM-10 guidance documents that it interprets the section 188(f) waiver provision to mean that the data exclusion policy contained in Appendix K and the procedures described in the exceptional events guideline no longer apply.

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<sup>2</sup>Other types of temporary or exceptional events that can impact ambient PM-10 concentrations are structural fires, chemical spills, industrial accidents, and clean-up activities following a major disaster. The EPA's Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events, July 1986, is still applicable for treating air quality data resulting from these types of exceptional, anthropogenic events.

Under this natural events policy, those statements no longer reflect EPA's interpretation of the relationship between the section 188(f) waiver provision, Appendix K, and the exceptional events guideline and should be treated as revised to the extent described herein.

In establishing this natural events policy, EPA now believes that, under certain circumstances, it is appropriate to again exclude PM-10 air quality data that are attributable to uncontrollable natural events from the decisions regarding an area's nonattainment status. The discussion in the Appendix at the end of this memorandum briefly describes the legal rationale underlying this revised interpretation.

### **Description of Policy**

The policy described in this document addresses PM-10 NAAQS violations caused by natural events in areas designated unclassifiable or attainment. It also addresses certain reclassification and redesignation questions for PM-10 nonattainment areas. This policy applies at the time the State determines that a PM-10 NAAQS has been violated due to natural events and addresses the question of what should be done to protect public health. The policy provides that EPA will: (1) exercise its discretion under section 107(d)(3) not to redesignate areas as nonattainment if the State develops and implements a plan to respond to the health impacts of natural events; and, (2) redesignate nonattainment areas as attainment by applying Appendix K, on a case-by-case basis, to discount data in circumstances where an area would attain but for exceedances that result from uncontrollable natural events.

The guiding principles followed in developing this policy are:

1. Protection of public health is the highest priority of Federal, State, and local air pollution control agencies.
2. The public must be informed whenever the air quality in an area is unhealthy.<sup>3</sup>

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<sup>3</sup>The air quality is considered unhealthy whenever the 24-hour PM-10 NAAQS is exceeded. The short-term PM-10 NAAQS is exceeded when the 24-hour average PM-10 concentration is greater than 150 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The 24-hour NAAQS is violated when the expected number of days per calendar year with a 24-hour average concentration above 150  $\mu\text{g}/\text{m}^3$  is greater than 1.0, as determined by procedures described in Appendix K.

3. All valid ambient air quality data should be submitted to the EPA Aerometric Information Retrieval System (AIRS) and made available for public access.

4. State and local agencies must take appropriate reasonable measures to safeguard public health regardless of the source of PM-10 emissions.

5. Emission controls should be applied to sources that contribute to exceedances of the PM-10 NAAQS when those controls will result in fewer violations of the standards.

#### **Definition of PM-10 Natural Events**

Volcanic and seismic activities: Ambient PM-10 concentrations caused by volcanic eruptions or seismic activity will be treated as due to natural events. Volcanic eruptions contribute to ambient PM-10 concentrations in two ways: (1) with emissions of primary PM-10 (e.g., ash), and (2) with emissions of precursor pollutants (e.g., sulfur dioxide) that react to form secondary particulate matter. Seismic activity (e.g., earthquakes) can also contribute to ambient PM-10 concentrations by shaking the ground, causing structures to collapse and otherwise raising dust (primary PM-10 emissions).

Also, emissions caused by anthropogenic activities that re-entrain volcanic ash during the first year (12 months) following an event will be treated as due to the natural event. One year is considered adequate time for cleaning ash deposits from areas where anthropogenic activities (e.g., vehicle traffic) would cause reentrainment. After 1 year, only emissions resulting from reentrainment of ash by high winds will be treated as due to a natural event.

Wildland fires: Ambient PM-10 concentrations caused by smoke from wildland fires will be treated as due to natural events if the fires are unwanted fires, not designated or managed as prescribed fires, and requiring appropriate suppression action by the wildlands manager.<sup>4</sup>

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<sup>4</sup>The EPA recognizes and endorses the Federal Wildland Fire Policies adopted by the Departments of Interior and Agriculture in December 1995. These policies refer to all fires on sparsely populated lands managed by Federal agencies (e.g., national parks, national forests, grasslands, etc.) as wildland fires. The wildland fires term includes unwanted fires that do not meet a prescription (wildfires), management-ignited prescribed fires, and naturally-ignited fires that meet a prescription (prescribed

For the purposes of this policy, wildland fire natural events are limited to unwanted fires that do not meet a prescription (wildfires) and, therefore, require appropriate suppression actions. Wildland prescribed fires, burning of forest harvest residues, agricultural burning, and fires for land clearing are not covered by this natural events policy. The EPA will develop broader guidance in the near future to address issues raised by smoke emissions from wildland prescribed fires and other policy issues surrounding prevention of significant deterioration, conformity, visibility protection programs and regional haze.

High Winds: Ambient PM-10 concentrations due to dust raised by unusually high winds will be treated as due to uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources, or (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM).<sup>5</sup>

The BACM must be implemented at contributing anthropogenic sources of dust in order for PM-10 NAAQS exceedances to be treated as due to uncontrollable natural events under this policy. Therefore, BACM must be implemented for anthropogenic dust sources contributing to NAAQS exceedances in attainment and unclassifiable areas and in moderate PM-10 nonattainment areas. In unclassifiable and attainment areas, BACM must be implemented for those contributing sources for which it has been defined within 3 years after the first NAAQS violation attributed to high wind events or from the date of this policy. In these same areas, implementation should be as expeditious as practicable for sources for which BACM are undefined.

The conditions that create high wind events vary from area to area with soil type, precipitation and the speed of wind gusts. Therefore, the State must determine the unusually high wind conditions that will overcome BACM in each region or subregion of the State.

### Response to NAAQS Violations

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natural fire). Only wildland fires that meet a prescription may be used to accomplish land and resource management objectives.

<sup>5</sup>BACM for PM-10 are techniques that achieve the maximum degree of emissions reduction from a source as determined on a case-by-case basis considering technological and economic feasibility (59 FR 42010, August 16, 1994).

If natural events cause ambient concentrations of PM-10 to violate a NAAQS, a plan should be developed to address future events.<sup>6</sup> A natural events action plan (NEAP) should include commitments to:

1. Establish public notification and education programs. Such programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM-10 could have on their health and inform them that: (a) certain types of natural events affect the air quality of the area periodically, (b) a natural event is imminent, and (c) specific actions are being taken to minimize the health impacts of events.
2. Minimize public exposure to high concentrations of PM-10 due to future natural events. Programs to minimize public exposure should: (a) identify the people most at risk, (b) notify the at-risk population that a natural event is imminent or currently taking place, (c) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM-10, and (d) suggest precautions to take if exposure cannot be avoided.
3. Abate or minimize appropriate contributing controllable sources of PM-10. Programs to minimize PM-10 emissions may include:

(a) volcanic and seismic activities - cleaning ash and dust deposits from areas where it would be re-entrained into the air by anthropogenic activities;

(b) wildland fires - prohibition of other burning activities during wildland fire events and steps to minimize fuel loadings in areas vulnerable to fire. Appropriate suppression actions, as determined by the wildlands manager, should be taken for fires that do not meet a prescription. The Federal Wildland Fire Policies require that fire management plans (FMP) be developed for

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<sup>6</sup>The annual PM-10 NAAQS is violated if the expected average annual arithmetic mean concentration for the past 3 calendar years is greater than 50  $\mu\text{g}/\text{m}^3$ . Several elevated 24-hour PM-10 concentrations caused by natural events can potentially cause the annual NAAQS (which is an annual arithmetic mean of 24-hour concentrations) to be exceeded. If natural events cause the annual NAAQS to be violated, one NEAP for the area will cover both the 24-hour and annual NAAQS.

all Federal lands with burnable vegetation.<sup>7</sup> It is anticipated that a goal of FMP will be to prevent NAAQS exceedances caused by wildland fires. Therefore, EPA envisions treating future FMP as acceptable plans for mitigating the public health impacts of smoke from wildland fires on Federal lands. Similar FMP should be developed to serve the same purpose for State and private wildlands.

(c) High winds - application of BACM to any sources of soil that have been disturbed by anthropogenic activities. The BACM application criteria require analysis of the technological and economic feasibility of individual control measures on a case-by-case basis. The NEAP should include analyses of BACM for contributing sources. The BACM for windblown dust include, but are not limited to, application of chemical dust suppressants to unpaved roads, parking lots and open areas; dust suppression at construction sites; use of conservation farming practices on agricultural lands; tree rows and other physical wind breaks; restricting or prohibiting recreational off-road vehicle activities; and use of surface coverings. If BACM are not defined for the anthropogenic sources in question, step 4 below is required.

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<sup>7</sup>FMP are not in place for all Federal lands at this time. These plans will be developed by Federal land managers in conjunction with all stakeholders including Federal, State and local air management agencies. The FMP will integrate fire, as a natural ecological process, into land and resource management plans and will form the basis for management actions taken on wildland fires. The FMP must include prescriptions for any use of fire to meet land and resource management objectives.

The EPA anticipates that FMP will achieve an acceptable balance between forest health and public health concerns. Public health concerns caused by the potential effects of smoke on air quality from wildland fires will be addressed in FMP through smoke management plans and other measures. Smoke management plans attempt to minimize smoke impacts by monitoring fire behavior, meteorology and air quality during the fire and by publicly announcing forecasts of likely smoke conditions in communities impacted by ongoing fires. Since FMP will treat fire as a natural ecological process, the impact of wildland fires on air quality and regional haze is expected to increase in the future. Therefore, EPA will encourage Federal land management agencies to support air quality monitoring near fires, to assess air and haze impacts, and to develop a fire information data base and regional-scale smoke management plans.



4. Identify, study and implement practical mitigating measures as necessary. The NEAP may include commitments to conduct pilot tests of new emission reduction techniques. For example, it may be desirable to test the feasibility and effectiveness of new strategies for minimizing sources of windblown dust through pilot programs. The plan must include a timely schedule for conducting such studies and implementing measures that are technologically and economically feasible.

5. Periodically reevaluate: (a) the conditions causing violations of a PM-10 NAAQS in the area, (b) the status of implementation of the NEAP, and (c) the adequacy of the actions being implemented. The State should reevaluate the NEAP for an area every 5 years at a minimum and make appropriate changes to the plan.

#### **Form and Timing of the Response**

The NEAP should be developed by the State air pollution control agency in conjunction with the stakeholders affected by the plan. Development of a NEAP for wildland fires should include input from Federal, State and private land managers in areas vulnerable to fire. Also, agencies responsible for suppressing fires and the citizens in the affected area should be involved in developing the plan. Development of a NEAP for high-wind events should include input from Federal, State and private managers of open desert lands, rangelands, agricultural lands; the construction industry; and organizations promoting the use of recreational off-road vehicles. Development of a NEAP for volcanic and seismic activities should include input from geophysicists and public works officials who will be responsible for ash removal and disposal. The plan should include documented agreements among the stakeholders as to planned actions, the implementation schedule, and the parties responsible for carrying out those actions.

At a minimum, States should develop NEAP for any areas where natural events cause or have caused a PM-10 NAAQS to be violated within 18 months of the violation or the date this policy is issued. The NEAP should be made available for public review and comment and may, but are not required to, be adopted as revisions to the SIP if current SIP rules are not revised. Final plans should be submitted to EPA for review and comment.

#### **Documentation of Natural Events**

In circumstances where a State has reason to believe that natural events have caused measured exceedances of the NAAQS, the

State is responsible for establishing a clear causal relationship between the measured exceedance and the natural event. Supporting documentation concerning the natural event could include filter analysis, meteorological data (e.g., wind speed and wind direction to support a source receptor relationship), modeling and receptor analysis, videos and/or photographs of the event and the resulting emissions, maps of the area showing sources of emissions and the area affected by the event, and news accounts of the event.

In the case of high-wind events where the sources of dust are anthropogenic, the State must document that BACM were required for those sources, and the sources were in compliance at the time of the high-wind event. If BACM are not required for some dust sources, the NEAP developed must include agreements with appropriate stakeholders to minimize future emissions from such sources using BACM.

The type and amount of documentation provided for each event should be sufficient to demonstrate that the natural event occurred, and that it impacted a particular monitoring site in such a way as to cause the PM-10 concentrations measured. This documentation should also provide evidence that, absent the emissions from the natural event, concentrations of PM-10 at the monitoring site under consideration would not cause a NAAQS exceedance.

The State should also make the documentation of natural events and their impact on measured air quality available to the public for review. This may be accomplished through a number of means, such as the publishing of newspaper announcements, periodic reports on air quality in the area, and through public hearings. This would serve to allow the public an opportunity to comment on whether the causal relationship between the natural event and the air quality measurement is convincing. Also, open hearings, where State and local regulatory boards review the documentation, are useful forums in which to notify the public of potentially-important policy decisions.

When air quality data affected by a natural event are submitted to EPA for inclusion into the AIRS data base, the State should request that a flag be placed on the data to indicate that a natural event was involved. Documentation to support the flagged data should be maintained by the State. A copy of the documentation should be sent to the relevant EPA Regional Office monitoring representative no later than 180 days from the time the exceedance occurred or from the date of this policy for past events. The Regional Office will acknowledge receipt of the

documentation and confirm that the natural event data were flagged within 60 days.

#### **Current PM-10 Nonattainment Areas**

States may request that a moderate nonattainment area not be reclassified as serious if it can be demonstrated that the area would attain the standards by the statutory attainment date but for emissions caused by natural events. Similarly, States may request redesignation of nonattainment areas to attainment if it can be demonstrated that the area would be meeting the NAAQS but for the emissions caused by natural events. This policy applies to emissions caused by natural events that have occurred since January 1, 1994.<sup>8</sup>

Approval of the above requests will be made by EPA on a case-by-case basis as determined by the sufficiency of the information submitted by the State to substantiate its claim. At a minimum, the State must have adopted a SIP for the area which demonstrates that, but for the emissions from natural events, the area would be able to attain the NAAQS. All of the requirements under section 107(d)(3)(E) of the Act must also be satisfied before an area can be redesignated to attainment. Those requirements include the submittal of a maintenance plan under section 175A, among other things. The maintenance plan for areas affected by natural events must include a NEAP.

#### **Failure to Submit a Natural Events Action Plan**

If a State fails to submit an adequate NEAP within 18 months in response to violations of a PM-10 NAAQS, EPA will notify the governor of the State that the area should be redesignated as nonattainment. The EPA's action, in such instances, would be authorized under the Act based on the conclusion that the health of citizens affected by such events is not being protected by the State.

Once the area violating the NAAQS is designated nonattainment, the State will be required to adopt a federally-enforceable SIP revision and address the sources of PM-10 emissions. Most likely, the SIP revision will include many of

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<sup>8</sup>The 1990 Amendments to the Clean Air Act required that control measures for anthropogenic sources in PM-10 nonattainment areas be implemented by the end of 1993. Therefore, this policy is made retroactive to January 1, 1994 so that NAAQS exceedances that may prevent areas from having sufficient clean air quality data to meet the standards will be covered by this policy.

the same mitigative measures that could have been included in a NEAP.

## **APPENDIX**

### **INTERPRETATION OF THE CLEAN AIR ACT (ACT) AS AMENDED IN 1990**

Section 107(d)(4)(B) of the Act, as amended in 1990, provided EPA with the authority to designate initial areas as nonattainment for PM-10. Where such determinations involved an assessment of a potential PM-10 nonattainment area's air quality data, Congress expressly required such assessments to be made in accordance with Appendix K (section 107(d)(4)(B)(ii)). Since, upon enactment, Congress did not alter or revise Appendix K in any way, all the provisions of Appendix K, including section 2.4, remained applicable under the Act. Among other things, section 2.4 authorizes EPA to discount air quality data that are attributable to "an uncontrollable event caused by natural sources" of PM-10. Consequently, if an area's nonattainment problem was attributable to uncontrollable natural sources, application of section 2.4 of Appendix K would allow the data from the uncontrollable natural event to be excluded from regulatory determinations regarding an area's nonattainment status.

The Act also added section 188(f) which specifically addresses the adverse influence of nonanthropogenic PM-10 sources. This section provides EPA with discretionary authority to waive a specific attainment date for all areas or certain planning requirements for serious PM-10 nonattainment areas that are significantly impacted by nonanthropogenic sources.

The EPA previously interpreted the inclusion of such an express waiver provision in the 1990 Amendments as implying that Congress may have intended to limit the application of section 2.4 of Appendix K. The argument in support of this interpretation was that in contrast to section 2.4 of Appendix K, which contemplates the discounting of data due to emissions from certain events, the section 188(f) waiver provisions envisioned that adjustments prompted by adverse air quality impacts that are attributable to data from natural uncontrollable sources of PM-10 should be made only after all the data have been considered and the area has been designated nonattainment.

The EPA, however, believes that this is not the only reasonable interpretation of the Act's provisions that is possible. The EPA believes that the congressional directive in section 107(d)(4)(B)(ii) to base designation decisions on Appendix K, and the differences in how section 188(f) and Appendix K address issues related to emissions from natural sources, indicate that it is not necessary to conclude that section 188(f) limits the application of section 2.4 of Appendix K. Rather, it is possible to view both section 188(f) and

section 2.4 of Appendix K as being operative and dealing with related but distinct aspects of the issues connected with emissions from natural PM-10 sources.

The starting point for this analysis is section 107(d)(4)(B)(ii), which, by operation of law, designated nonattainment any area with data showing a violation of the PM-10 NAAQS before January 1, 1989 "(as determined under part 50, appendix K of title 40 of the Code of Federal Regulations)." In that section, Congress required the use of Appendix K in designating areas nonattainment without indicating that any portion of Appendix K was to be considered invalid. Thus, that provision indicates that Congress intended designation decisions to be based on that appendix, including the procedures in section 2.4 regarding exceptional events.

Notably, section 2.4 defines an exceptional event as "an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location." Thus, exceptional events include both uncontrollable natural sources and nonrecurring events related to any kind of source of particulate matter. Section 2.4 further provides that data from such events may be discounted (i.e., EPA may compensate for such data or exclude such data entirely from decisions regarding an area). Consequently, Appendix K contemplates that data from "exceptional events" may be discounted, including, but not limited to, data due to emissions from uncontrollable natural events.

On the other hand, section 188(f), which was enacted by Congress in the same amendments as section 107(d)(4)(B)(ii), discusses PM-10 natural sources in terms of whether they are "anthropogenic" or "nonanthropogenic." It does not discuss such sources or emissions in the terms of Appendix K (i.e., it does not discuss matters in terms of exceptional or nonexceptional events, nor does it distinguish between uncontrollable and controllable natural sources). In general, section 188(f) provides that EPA may waive certain requirements where EPA determines that anthropogenic sources do not contribute significantly to a violation of the PM-10 standard, and that EPA may waive a specific attainment date if it determines that the contribution of nonanthropogenic emissions to a violation is demonstrated to be "significant."

As Congress, without express exception, directed the use of Appendix K in determining whether areas were attaining the PM-10 standard, EPA believes it is reasonable to interpret section 188(f) as not limiting the use of that appendix, provided that such an interpretation does not render section 188(f) invalid. The EPA believes that the approach taken in this natural events

policy does not do that, and that it represents a reasonable harmonization of these provisions of the Act and the language of Appendix K regarding exceptional events.

Under EPA's revised interpretation, section 188(f) continues to have force and effect. As section 188(f) addresses the issues in terms of "anthropogenic" and "nonanthropogenic" sources, not in terms of exceptional events (which are defined in Appendix K as both uncontrollable natural events and nonrecurring events from both natural and other sources), it is possible to view the waivers of section 188(f) as being potentially applicable only to areas that are designated nonattainment because the data do not qualify for adjustment under Appendix K. For such areas, it may be reasonable and appropriate to grant waivers from some requirements that simply do not make sense in light of the nature of the sources generating the PM-10 problem in the area. Thus, EPA's new interpretation does not render section 188(f) meaningless. Consequently, EPA believes that the exercise of its discretionary authority under Appendix K to discount or de-weight air quality data that are affected by uncontrollable natural sources of PM-10 is reasonable and appropriate.

NATURAL EVENTS ACTION PLAN (NEAP)  
FOR PM10 EXCEEDANCES DUE TO HIGH WIND EVENTS  
IN DOÑA ANA COUNTY

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November 25, 1997



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ATTACHMENT 1: "Analysis of PM10 Exceedances, January 1995 - March 1997, Doña Ana County, New Mexico" — Erik Aaboe, Air Quality Bureau, New Mexico Environment Department

ATTACHMENT 2: "Summary of PM10 Monitoring Data: Doña Ana County, New Mexico" — Air Quality Bureau, New Mexico Environment Department

# EXECUTIVE SUMMARY

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## PURPOSE OF THIS REPORT

On some days in recent years, levels of airborne particulate matter during dust storms have reached unhealthful levels in Doña Ana County. This report describes an opportunity for local groups and citizens to play a major role in designing and carrying out responses to this problem that are appropriate for local environmental and economic conditions. Citizens, local governments, civic groups and businesses are invited to participate in a Task Force that will develop reasonable, common-sense measures to protect public health and mitigate the problem where feasible. Federal policy provides for the approach described here as an alternative to federally-imposed requirements that may be unnecessarily restrictive and inappropriate for air quality problems resulting from natural forces and non-industrial sources.

## REPORT SUMMARY

Particulate matter less than 10 microns in diameter (PM10) is one of the air pollutants for which the Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards. These standards limit the allowable concentration of the pollutant in the ambient air, which is the outside air near ground level that people breathe. The standards are set at a level to prevent adverse health effects, which for PM10 may include aggravation of asthma and other respiratory diseases.

For PM10, there are standards for both short-term (24-hr) and long-term (annual) average concentration. At a number of locations throughout New Mexico, the Air Quality Bureau of the New Mexico Environment Department (NMED) routinely monitors the ambient concentration of PM10 and other pollutants for which ambient standards have been set.

In most cases, violation of a federal air quality standard results in the area being classified as nonattainment. The state must then submit a plan for reducing pollution levels. Such plans must include stringent controls on industrial and other sources of the pollutant. During 1994-1996, numerous exceedances of the 24-hr average concentration limit for PM10 were measured at NMED monitoring sites in Doña Ana County. Although air quality in relation to PM10 was Good to Moderate on most days, the number of days when the standard was exceeded was greater than the federal air quality standard allows.

The NMED Air Quality Bureau has analyzed conditions that caused the recent exceedances and found that a small fraction of the exceedances were caused by exceptional events such as an industrial accident and active construction work adjacent to the monitors. EPA Policy allows for such exceptional events to be excluded from determinations of attainment status. The remaining majority of the exceedances resulted from high winds lifting dust into the air from areas of exposed soil (that is, from dust storms).

Federal law and policies recognize that declaring an area nonattainment and requiring stringent pollution controls on industrial sources is not an appropriate response when an ambient standard is violated because of natural events such as blowing dust from high winds. EPA's Natural Events Policy describes common-sense alternative steps that States may take to avoid

nonattainment status in such cases. The policy calls for States to develop a Natural Events Action Plan (NEAP) to protect public health by:

- 1) educating the public about the problem and what is being done to respond to it;
- 2) issuing advisories when PM<sub>10</sub> levels are unhealthful;
- 3) taking reasonable measures to control sources of windblown dust that are the result of human activities and that contribute significantly to the problem.

In considering what dust control measures are reasonable, both cost and effectiveness should be taken into consideration. Local stakeholders and the state have considerable freedom in deciding what measures are reasonable under the local environmental and economic conditions.

Stakeholder involvement in developing and carrying out the NEAP will ensure that it meets local needs. The New Mexico Environment Department invites Doña Ana County citizens, local governments, businesses and other parties that may be affected to participate in a Task Force to address the problem. The Environment Department envisions that its role, after coordinating the initial formation of the Task Force, may be limited to providing advice and technical assistance and serving as liaison to the Environmental Protection Agency.

As an initial step in creating this Task Force, the NMED Air Quality Bureau is compiling a mailing list for those who would like to receive additional information, and a list of parties who are interested in participating on the Task Force. Any person or group wishing to be on these lists should contact Brad Musick (505-827-0335) of the Air Quality Bureau.

# BACKGROUND

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## FEDERAL AIR QUALITY STANDARDS FOR PM<sub>10</sub>

PM<sub>10</sub> refers to suspended particles less than or equal to 10 microns in diameter. PM<sub>10</sub> is a mixture of materials that can include dust, smoke, and soot. PM<sub>10</sub> particles are small enough to be inhaled deep into the lungs. High levels of PM<sub>10</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. People most vulnerable to these effects include infants and children, the elderly, adults who are exercising (because they breathe in more air), and those suffering from asthma or bronchitis.

The Federal Clean Air Act provides for the establishment of National Ambient Air Quality Standards (NAAQS) to protect the public from harmful levels of the most common pollutants in the ambient air. Ambient air is the outside air near ground level that people breathe. State and local agencies regularly monitor the concentration of these pollutants for which national ambient standards have been set.

In 1987, the federal Environmental Protection Agency (EPA) set standards for both short-term (24-hr) and long-term (annual) average concentration of PM<sub>10</sub>. Concentration of PM<sub>10</sub> is measured in units of micrograms of particulate matter per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). The standards set in 1987 are:

### 24-hour standard:

To attain this standard, the daily 24-hr concentration must not exceed **150  $\mu\text{g}/\text{m}^3$**  more than once per year, averaged over three years. If measurements are not taken daily, the observed number of exceedances is adjusted upwards to account for the possibility that exceedances may have occurred on days when no measurement was made.

### Annual standard:

To attain this standard, the arithmetic average of the 24-hr samples for a period of 1 year, averaged over 3 consecutive years, must not exceed **50  $\mu\text{g}/\text{m}^3$** .

The distinction between an exceedance and a violation of a standard is important. Violation of a standard ordinarily results in the area being declared "nonattainment" and being required to take steps to reduce pollutant levels.

An exceedance is when the measured concentration of the pollutant is greater than the concentration limit specified in the standard. A measurement of over 150  $\mu\text{g}/\text{m}^3$  in a 24-hr period is an exceedance of the 24-hr standard, and a measurement of over 50  $\mu\text{g}/\text{m}^3$  in any one year is an exceedance of the annual standard.

A violation of the 24-hr standard is when the average number of exceedances per year, averaged over three years, is greater than one. An example would be if there were four exceedances in one year, even if there were no exceedances in the preceding or following two years. Similarly, the annual standard level would be violated only if the average of three

consecutive annual averages was greater than concentration limit of  $50 \mu\text{g}/\text{m}^3$ . This could result from one year with an average very much exceeding the limit, followed by two years that did not exceed the limit but were high enough that the three-year average was over the limit.

## RECENT REVIEW OF THE STANDARDS FOR PARTICULATE MATTER

EPA recently reviewed the scientific data on health and environmental effects of particulate matter to determine if the existing standards were sufficient to protect public health. In July 1997, following the recommendations of this review, EPA retained the standards for PM<sub>10</sub> and issued new ambient standards for fine particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>).

The new PM<sub>2.5</sub> standards have been the subject of much press coverage and controversy. Issues regarding the recent exceedances of the PM<sub>10</sub> standard in Doña Ana County (described below) are not related to the new PM<sub>2.5</sub> standards. The particulate matter standards which have been exceeded in Doña Ana County are the PM<sub>10</sub> standards which have been in existence since 1987.

EPA's review concluded that there are differences in origin, composition, and health effects between the fine fraction (less than 2.5 microns in diameter, PM<sub>2.5</sub>) and the coarse fraction (2.5 to 10 microns) of PM<sub>10</sub>. Particles in the fine fraction (PM<sub>2.5</sub>) are produced primarily by fuel combustion, consist of both solid and liquid droplets of sulfates, nitrates, and organic compounds, and are hazardous to health in lower concentrations than the coarse fraction of PM<sub>10</sub>. The coarse fraction commonly originates from dust, often consists mostly of mineral particles found in earth, rock and soil, and causes adverse health effects only at higher concentrations than the fine fraction. In discussing the rationale for retaining a PM<sub>10</sub> standard, EPA stated that:

"Although the role of coarse fraction particles in much of the recent epidemiological results is unclear, limited evidence from studies where coarse fraction particles are the dominant fraction of PM<sub>10</sub> suggest that significant short-term effects related to coarse fraction particles include aggravation of asthma and increased upper respiratory illness. In addition, qualitative evidence suggests that potential chronic effects may be associated with long-term exposure to high concentrations of coarse fraction particles."

EPA retained both the short-term and long-term PM<sub>10</sub> standards, with a slight change in the manner of calculating the 24-hr standard. To attain the revised standard, the 99th percentile of the distribution of the 24-hr concentrations for a period of 1 year, averaged over 3 years, must not exceed  $150 \mu\text{g}/\text{m}^3$ .

## VIOLATIONS OF THE PM<sub>10</sub> STANDARD IN DOÑA ANA COUNTY

In 1994 through mid-1997, the National Ambient Air Quality Standard (NAAQS) for 24-hr average PM<sub>10</sub> concentration was violated at most air quality monitoring sites in Doña Ana County (see Attachment 2 for site locations). Details of the PM<sub>10</sub> monitoring results are given in Attachment 1 and Attachment 2. Following is a summary of the results.

In 1994, the 24-hr standard concentration of  $150 \mu\text{g}/\text{m}^3$  was exceeded on 3 days at one site, Sunland Park City Yard. In 1995, exceedances were again recorded at Sunland Park City Yard (2 days) and at Anthony Elementary School (6 days). In 1996, exceedances were recorded at 7 of 8 sites in the county. At the sites in the southern part of the county, the number of exceedances ranged from 10 to 18, and two sites recorded values approximately 10 times higher than the standard. Two sites on the eastern edge of Las Cruces recorded 6 and 8 exceedances and had maximum values of 1,065 and  $806 \mu\text{g}/\text{m}^3$ .

The only site not recording any exceedances in 1996 was the NMED office near downtown Las Cruces. The monitor at this site is operated only on every 6th day. By chance, this monitor was not operating on any of the 11 days when exceedances were recorded by at least one of the two continuously-operated monitors in the Las Cruces area. In view of the number and severity of exceedances at the other Las Cruces area sites, it is likely that exceedances occurred at the Las Cruces NMED offices on one or more of the days when the monitor was not operated.

There were so many exceedances in 1996 that all sites are in violation of the 24-hr standard for PM<sub>10</sub>, regardless of how many exceedances might be recorded in 1997 and 1998.

## CAUSES OF THE RECENT EXCEEDANCES

NMED Air Quality Bureau staff have analyzed weather conditions and other circumstances associated with recent exceedances and issued a report, included here as Attachment 1. Following is summary of that report.

Considering all sites from January 1995 through March 1997, a total of 106 exceedances were measured. Exceedances occurred on 47 different days. A few of the exceedances were found to have been caused by an industrial accident (2 exceedances) and by construction activities adjacent to the monitor (13 exceedances). The industrial accident was a start-up problem with an acid plant at the ASARCO smelter in Texas. A plume of smoke from the smelter caused exceedances at the Sunland Park City Yard site. Some of the exceedances due to construction activities occurred at Chaparral when the school yard next to the monitor was under construction. Other construction-related exceedances were at the Santa Teresa Border Crossing site. The NMED Air Quality Bureau has requested that EPA exclude these exceedances from determination of attainment status, in accordance with EPA policy on exceedances caused by unusual, non-recurring events.

The remaining exceedances (91 out of 106) were found to have been caused by windblown dust raised by high winds. Evidence for this conclusion included weather records of high winds, time-lapse video photography, and news reports of major dust storms on the exceedance days. During dust storms, high winds cause dust to become airborne from areas with exposed dry soil, including the surrounding desert, dirt roads, and areas disturbed by construction or other earth-moving activities. The reason that dust storms were especially frequent and severe in 1996 was likely the extreme drought in this area from Fall 1995 through Spring 1996. The NMED Air Quality Bureau requested that these exceedances caused by high winds also be excluded by EPA from determination of attainment status, in accordance with EPA's Natural Events Policy described below.

# EPA POLICY ON NATURAL EVENTS

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## EPA NATURAL EVENTS POLICY— BACKGROUND

EPA policy regarding violations of the PM10 NAAQS due to natural events was set forth in a memorandum dated May 30, 1996. Following is a summary of the policy as it applies to high wind events.

By law, the usual consequence when pollutant levels in an area violate one of the NAAQS is that the area is declared nonattainment for that pollutant. The state must then develop and implement a plan for measures that will be taken to reduce emissions of the pollutant and bring the ambient levels of the pollutant back within the standards. Such plans must include stringent pollution control measures for new and existing industries and other sources of the pollutant.

Federal law and policies recognize that declaring an area nonattainment and requiring stringent controls on industrial sources is not an appropriate response where natural events contribute significantly to exceedances of the standard. EPA's policy memorandum of May 30, 1996 sets forth requirements for a more appropriate approach to such natural events. The focus of this alternative approach is protection of public health.

## EPA NATURAL EVENTS POLICY— GUIDING PRINCIPLES

The guiding principles of the Natural Events Policy are:

1. Protection of public health is the highest priority of Federal, State, and local air pollution control agencies.
2. The public must be informed whenever the air quality in an area is unhealthful (that is, whenever the 24-hr ambient air quality standard for PM10 is exceeded)
3. All valid ambient air quality data should be submitted to the EPA's national database and made available for public access.
4. State and local agencies must take appropriate reasonable measures to safeguard public health regardless of the source of PM10 emissions.
5. Emission controls should be applied to sources that contribute to exceedances of the PM10 NAAQS when those controls will result in fewer violations of the standards.

## DEFINITION OF PM10 NATURAL EVENTS

Three kinds of PM10 Natural Events are defined in the EPA policy memorandum: volcanic and seismic events, wildland fires, and high winds. Only high wind events will be discussed here, as these are kind of events relevant to the recent exceedances in Doña Ana County. The policy defines high wind events as follows.

"Ambient PM-10 concentrations due to dust raised by unusually high winds will be treated as due to uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources, or (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM)."

The term "anthropogenic" means strongly influenced by the activities of humans. Examples of anthropogenic sources would include vehicular traffic on or off roads, and construction activities. Best Available Control Measures (BACM) for PM10 are techniques that achieve the maximum degree of emissions reduction from a source as determined on a case-by-case basis considering technological and economic feasibility.

Although dust storms are referred to as "natural events", it should be recognized that dust storms require not only high winds, but also areas of soil that can serve as sources of dust. Areas where the soil is loose, dry, and barren of rock, vegetation or other cover are highly susceptible to blowing. Some such susceptible areas exist naturally in the desert climate of southern New Mexico, but others may be created or made to emit more dust by human activities.

#### DOCUMENTATION OF NATURAL EVENTS

In New Mexico, the state Environment Department is responsible for identifying exceedances of the NAAQS caused by high winds. The Environment Department must first mark the exceedances due to high winds with a special notation (called a "flag") in EPA's national database of ambient monitoring data. The NMED must then prepare a document clearly showing, by analysis of weather data and other information, that the exceedances would not have occurred if not for the high wind events. The state's documentation of these high wind events and their impact on air quality must be made available to the public. The public may review and comment on whether the documentation convincingly shows a causal relationship between the high wind events and the exceedances.

Attachment 1 is the documentation prepared and submitted for high wind events that occurred during January 1995 through March 1997.

#### NATURAL EVENTS ACTION PLAN (NEAP)

If including ambient concentrations of PM10 during natural events in attainment determinations would result in a violation of a NAAQS, the state has two choices: 1) allow the area to be declared nonattainment, or 2) develop and submit to EPA a plan describing what will be done to address future events. A Natural Events Action Plan (NEAP) should include commitments to:

1. Establish public education programs.

Such programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM10 could have on their health and inform them that: (a) certain types of natural events affect the air quality of the area periodically, (b) an advisory system (see #2 below) will warn them when a natural event is imminent, and (c) specific actions are being taken to minimize the health impacts of events.



2. Minimize public exposure to high concentrations of PM10 due to future natural events.

Programs to minimize public exposure should: (a) identify the people most at risk, (b) notify the at-risk population that a natural event is imminent or currently taking place, (c) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM10, and (d) suggest precautions to take if exposure cannot be avoided.

3. Abate or minimize appropriate contributing controllable sources of PM10.

There are several steps in determining which sources might need controls and in identifying the appropriate control measures for those sources:

- a) identify sources of fugitive dust that are the result of human activities;
- b) for each type of source, determine whether it contributes significantly to the number or severity of PM10 exceedances during high wind episodes;
- c) for sources which contribute significantly to exceedances, identify candidate control measures for which effectiveness and feasibility have been demonstrated (if no appropriate measure has previously been identified for a particular kind of source, step 4 below is required). Measures previously shown to be effective for reducing windblown dust include paving or application of chemical dust suppressants to unpaved roads, parking lots and open areas; dust suppression at construction sites; use of conservation farming practices on agricultural lands; tree rows and other physical wind breaks; restricting recreational off-road vehicle activities; and use of surface coverings.
- d) evaluate the effectiveness, technological feasibility, and cost of candidate control measures on a case-by-case basis and produce a rationale for selection of control measures;
- e) implement the selected control measures and monitor their effectiveness.

If exceedances occur after the NEAP has been implemented, the state's documentation of natural events must include evidence that Best Available Control Measures were being implemented when the exceedances occurred.

4. Develop and implement new control measures if necessary.

The NEAP may include commitments to conduct pilot tests of new emission reduction techniques to determine their feasibility and effectiveness. The plan must include a timely schedule for conducting such studies and implementing measures that are technologically and economically feasible.

5. Periodically reevaluate: (a) the conditions causing violations of a PM10 NAAQS in the area, (b) the status of implementation of the NEAP, and (c) the adequacy of the actions being

implemented. The State should reevaluate the NEAP for an area at least every 5 years and make appropriate changes to the plan.

Those who own, manage or use land may be concerned about requirements for dust control measures. It should be emphasized that the policy calls for such measures only if several conditions are met. Controls should not be required if the source type does not contribute significantly to the number or severity of exceedances, or if the source is not significantly impacted by human activities, or if the measures would be unreasonably costly or only minimally effective. Control measures should be limited to those that specifically address the problem of dust levels during high wind episodes — that is, some restrictions or requirements might apply only during periods of high wind or during the season when high winds are most common. Requirements for control measures should not be decided upon until all affected parties have had ample opportunity to express their concerns and all those involved have tried to reach a reasonable solution. The NMED anticipates that requirements for control measures, if any are found to be needed, will most likely take the form of local ordinances rather than state regulations.

#### STAKEHOLDER INVOLVEMENT IN DEVELOPING THE PLAN

The EPA Policy Memo states that the NEAP should be developed by the State air pollution control agency in conjunction with stakeholders affected by the plan. The plan should include documented agreements among the stakeholders as to planned actions, the implementation schedule, and the parties responsible for carrying out those actions.

#### FAILURE TO SUBMIT OR IMPLEMENT A PLAN

If an adequate Natural Events Action Plan is not submitted or implemented, EPA will notify the Governor of the State that the area in question should be redesignated as nonattainment. This action would be authorized under the Clean Air Act based on the conclusion that the health of citizens affected by such events was not being protected by the State. As described earlier, the State would then be required to adopt a federally-enforceable revision to its State Implementation Plan (SIP) to address the sources of PM<sub>10</sub> emissions. The SIP revision would likely include the same mitigative measures that could have been included in a NEAP, in addition to new and burdensome federal requirements for local industries that would result in little or no improvement in air quality.

#### ANTHONY — THE CURRENT PM<sub>10</sub> NONATTAINMENT AREA

A small portion of Doña Ana County has been a PM<sub>10</sub> nonattainment area since 1990. The area is less than two square miles containing most of the community of Anthony (the New Mexico portions of Sections 35 & 36 of Township 26 South, Range 3 East). The area was designated nonattainment because of exceedances of the PM<sub>10</sub> standard in 1988-1990, and the State submitted a revision to the State Implementation Plan to the EPA in 1991. In its analysis of the 1988-1990 exceedances, the NMED concluded that these resulted from windblown dust during episodes of high wind.

EPA policy would allow the Anthony nonattainment area to be included in the NEAP for Doña Ana County. In this way, the area could eventually be redesignated as attainment if the monitoring data showed no exceedances (excluding those flagged and documented as natural events) for 3 years.

## FRAMEWORK FOR IMPLEMENTING THE PLAN

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The New Mexico Environment Department will create a public involvement process to identify the issues regarding implementation of the plan and to carry out the details of the plan. The Department has begun this process by identifying potential stakeholders and interested parties.

The Department plans to hold a public informational meeting before the end of March 1998. The meeting will be announced by press release and through mailings to potential stakeholders. The announcement will state that copies of the present document and other related information (e.g., EPA Fact Sheets) are available upon request. Stakeholders will be invited to join a Task Force which will undertake to carry out the components of the Natural Events Action Plan as previously described. Any person or group that wishes to receive informational mailings or is considering participation on the Task Force is encouraged to contact Brad Musick (505-827-0335) of the New Mexico Air Quality Bureau.

Although the Task Force may continue to meet after 1998, it is the Department's hope that the following could be accomplished by the end of 1998:

- a) public education material prepared and distributed;
- b) public advisory system established to warn when episodes of high PM<sub>10</sub> are imminent;
- c) completed analyses to determine which sources contribute significantly to exceedances.

## HOW TO GET ADDITIONAL INFORMATION

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Printed copies of the following documents are available from the New Mexico Air Quality Bureau at:

Air Quality Bureau  
New Mexico Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502-6110

Phone: (800) 810-7227  
Facsimile: 505-827-0045

Check the NMED Web site at [www.nmenv.state.nm.us](http://www.nmenv.state.nm.us) for an updated list of documents and downloadable versions of some documents.

1. "Natural Events Action Plan (NEAP) for PM10 Exceedances Due to High Wind Events in Doña Ana County" (*this document*)
2. "Analysis of PM10 Exceedances, January 1995-March 1997, Doña Ana County, New Mexico" (*Attachment 1 to this document*)
3. "Summary of PM10 Monitoring Data: Doña Ana County, New Mexico" (*Attachment 2 to this document*)
4. EPA Memorandum on Natural Events Policy (*also on the Internet at <http://www.epa.gov/ttn/caaa/t1/memoranda/nepol.pdf>*)
5. EPA Fact Sheet: EPA's Natural Events Policy for Particulate Matter (*also on the Internet at [http://www.epa.gov/ttn/caaa/t1/fact\\_sheets/nefact.pdf](http://www.epa.gov/ttn/caaa/t1/fact_sheets/nefact.pdf)*)
6. EPA Fact Sheet: Health and Environmental Effects of Particulate Matter
7. EPA Fact Sheet: EPA's Revised Particulate Matter Standards

## ACRONYMS & ABBREVIATIONS

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BACM	Best Available Control Measures
NMED	New Mexico Environment Department
EPA	U.S. Environmental Protection Agency
NAAQS	National Ambient Air Quality Standards
NEAP	Natural Events Action Plan
PM <sub>2.5</sub>	Particulate Matter less than 2.5 microns in diameter
PM <sub>10</sub>	Particulate Matter less than 10 microns in diameter
µg/m <sup>3</sup>	micrograms per cubic meter

## ATTACHMENT 2

### Summary of PM10 Monitoring Data: Doña Ana County, New Mexico

Air Quality Bureau  
New Mexico Environment Department  
P.O. Box 26110  
Santa Fe, NM 87502

November 25, 1997

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# Where and How is PM10 Monitored in Doña Ana County?

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## PM10 MONITORING SITES IN DOÑA ANA COUNTY — Table 1 & Maps (p. 17)

Site locations are given in Table 1 and the attached maps. Since 1993, NMED has increased the number of PM10 monitoring sites in the county from three to eight. Three sites are in the Las Cruces area, and the others are in the southern part of the county.

## HOW PM10 IS MEASURED

In Doña Ana County, the NMED Air Quality Bureau uses two types of instruments for measuring PM10 concentration. Both types separate out the finer particles (less than 10 micron diameter) and collect them on a filter for weighing. Average PM10 concentration is determined as the weight of the particles (in micrograms,  $\mu\text{g}$ ) per volume of air (in cubic meters,  $\text{m}^3$ ) drawn into the sampler during the sampling period.

## MEASUREMENT FREQUENCY: DAILY VS. EVERY-SIXTH-DAY 24-HR AVERAGES

Sampler — To obtain a measurement with this instrument, the filter which has collected PM10 must be retrieved by a technician and brought back to the laboratory for weighing. The measurement period is controlled by programming the instrument to start and stop taking in air at the desired times. Normally, this instrument is operated to run for 24 hours (midnight to midnight) so that the resulting measurement is a 24-hr average PM10 concentration. Because this instrument requires manual servicing for each measurement, it is poorly suited for obtaining measurements every day of the year. Before 1994, when the continuous monitors became available, daily data were obtained at some sites by installing several samplers per site and operating them on a staggered schedule.

Continuous Monitor — The other type of instrument operates continuously for periods of weeks. The filter which collects PM10 is weighed continuously and automatically by the instrument. This monitor calculates real-time PM10 concentrations which are normally converted to one-hour and 24-hour averages for every day. Now that these continuously-operating instruments are providing daily measurements at all but one site, the one-measurement-per-day type samplers are normally operated only on every 6th day to provide data for comparative purposes.

Seven sites in the county have only the continuous-measurement type of monitor, one has only the sampler normally operated every 6th day, and two sites have both types.

TABLE 1. NMED'S PM10 MONITORING SITES IN DOÑA ANA COUNTY

Code & Name	Location	Monitor Type(s)	Start of Continuous
<i>LAS CRUCES AREA</i>			
6R Las Cruces ED	Environment Dept. District Off. 1001 N. Solano Dr. Las Cruces, NM	Sampler	
6ZJ Roadrunner	Roadrunner Blvd. near Well #45 East Mesa of Las Cruces	Continuous	Nov 1995
6ZL Holman	Holman Rd. near Well #41 Near Butterfield Park, N. of US70	Continuous	Oct 1995
<i>SOUTH COUNTY AREA</i>			
6ZK Chaparral	Chaparral Mid School 680 McCombs Chaparral, NM	Continuous	Feb 1996
6CM Anthony	Anthony Elementary School Anthony, NM	Both	Dec 1994
6ZG Sunland Park City Yard	Sunland Park City Yard McNutt & Anapra Rd. Sunland Park, NM	Both	Aug 1994
6ZM Sunland Park Desert View	Desert View Elementary School 5935A Valle Vista Sunland Park, NM	Continuous	Feb 1996
6ZN Santa Teresa Xing	Santa Teresa Border Crossing 104-2 Sta. Teresa Intl. Blvd. Santa Teresa, NM	Continuous	Jan 1996

## How Many Times Has the Federal Standard been Exceeded?

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### NUMBER OF 24-HR AVERAGES EXCEEDING THE STANDARD — Table 2

Table 2 gives the number of measured 24-hr averages that have exceeded the federal standard level of  $150 \mu\text{g}/\text{m}^3$  in recent years. Some things to note about these data are:

- 1) Some sites had data for only a small fraction of the days in a year, either because the measurements started during that year or because the instrument used was the sampler type that is often operated on a less-than-daily schedule. Sites with less-than-daily measurements may have recorded fewer exceedances simply because the sampler was not operating on days when PM10 concentrations were high. In cases when there were as few as 61 measurements per year (sampling every sixth day), the number of exceedances that actually occurred would likely have been five times as many as observed. This issue is examined in more detail in the following table (Table 3).
- 2) The number of sites recording exceedances increased from 0 out of 3 in 1993 to 7 out of 8 in 1996 (note that five new sites had been started by 1996).
- 3) 1996 was an exceptional year; compared to recent years, the number of exceedances was unusually high, especially at the sites in the southern part of the county. In the Las Cruces area, exceedances were recorded for the first time in recent years (at sites that were new in 1996).

Ambient Air Quality Monitoring Data For Doña Ana County  
for particulate matter less than 10 microns in diameter (= PM10)

**TABLE 2. NUMBER OF PM10 DAILY AVERAGES AND NUMBER EXCEEDING STANDARD**  
Federal standard is 150 ug/m3 for values rounded to nearest 10 ug/m3

Site	Monitor Type	Number of daily averages							
		Total				Exceeding 150 ug/m3			
		1993	1994	1995	1996	1993	1994	1995	1996
LAS CRUCES AREA									
Las Cruces ED	S	61	61	61	61	0	0	0	0
Roadrunner Blvd.	C	...	...	40	357	...	...	0	6
Holman Rd.	C	...	...	32	365	...	...	0	8
SOUTH COUNTY AREA									
Chaparral	C	...	...	...	321	...	...	...	11
Anthony	S	178	182	59	61	0	0	0	0
Anthony	C	...	...	354	361	...	...	6	12
Sunland Park CY	S	346	239	73	59	0	0	1	0
Sunland Park CY	C	...	141	351	364	...	3	2	18
SP-Desert View	C	...	...	...	316	...	...	...	10
Santa Teresa Xing	C	...	...	...	339	...	...	...	14

Monitor Type: S = Sampler, normally run for 24 hr every 6th day  
C = Continuous, automated continuous sampling every day

## Why Did Some Instruments Record Few or No Exceedances in 1995-1996?

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### LESS-THAN-DAILY MEASUREMENTS MISSED MOST RECENT EXCEEDANCES — Table 3

The instruments that recorded few or no exceedances in 1995-1996 were the sampler type instruments at Las Cruces ED, Anthony and Sunland Park City Yard. Since 1995, these instruments have been operated only on every sixth day. They are operated on this reduced schedule because they require manual servicing each time a measurement is made. One possible explanation for the fewer exceedances recorded by the sampler type instruments is that they were not scheduled to be operating on most days when PM10 concentrations were high. We can examine this possibility by seeing how often the samplers were operating on days when nearby continuous monitors recorded exceedances. This comparison is given in Table 3.

At Anthony and Sunland Park City Yard, both types of instruments are located together. The Las Cruces ED site has only the sampler, but exceedances at the other two Las Cruces area sites (Holman Road and Roadrunner Blvd), which had continuous monitors, can be used to indicate days when exceedances might have been expected at the Las Cruces ED site.

The data in Table 3 show that the samplers were not being operated on most days when exceedances were recorded at nearby continuously-operated monitors. To put this another way, most days with high PM10 levels happened to occur, by chance, on days when the samplers were not scheduled to take a measurement.

These results have important implications for the status of the Las Cruces urban area. Although exceedances were recorded only by the continuous monitors at the eastern fringe of the urban area, it is likely that exceedances also occurred in the built-up central area of the city but were not measured because the sampler at Las Cruces ED offices was not operating on those days. The surrounding of the Las Cruces site are mostly paved and built-up, whereas the Holman and Roadrunner sites have more open desert and dirt roads in their immediate vicinity. It is possible that exceedances were less frequent or less severe at the ED site because of its surroundings, but the more complete data sets from the nearby Holman and Roadrunner sites are the best available indicators of whether a violation occurred at the ED site.



# Ambient Air Quality Monitoring Data for Doña Ana County

for particulate matter less than 10 microns in diameter (= PM10)

TABLE 3. COMPARISON OF MONITOR TYPES, 1995 - JUNE 1997

Site Pair	Continuous Monitor Exceedance Days	Sampler, On Days with Exceedances at Continuous Monitors		
		No Measurement	Measured, No Exceedance	Measured, Exceedance
S - Las Cruces ED				
C - Roadrunner and/or Holman	11	11	0	0
S - Anthony				
C - Anthony	25	23	2	0
S - Sunland Park CY				
C - Sunland Park CY	23	20	2	1

## How High Were Recent PM10 Values?

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### HIGHEST PM10 VALUES — Table 4

Table 4 gives the highest and 2nd highest values for PM10 concentration for each site and year. The maximum values for 1996 at Roadrunner Blvd., Anthony, and Sunland Park City Yard were very high, from 6 to 10 times the federal standard.

**Ambient Air Quality Monitoring Data For Doña Ana County**  
for particulate matter less than 10 microns in diameter (= PM10)

**TABLE 4. EXTREME VALUES OF 24-hr AVERAGE PM10 CONCENTRATION**  
data in micrograms per cubic meter (ug/m3)

Site	Monitor Type	Highest and 2nd Highest 24-hour Averages							
		1993		1994		1995		1996	
LAS CRUCES AREA									
Las Cruces ED	S	56	40	53	50	71	51	93	40
Roadrunner Blvd.	C	...	...	...	...	79	60	1,065	399
Holman Rd.	C	...	...	...	...	40	40	806	382
SOUTH COUNTY AREA									
Chaparral	C	...	...	...	...	...	...	803	532
Anthony	S	99	98	154	126	142	84	81	78
Anthony	C	...	...	...	...	310	272	1,514	490
Sunland Park CY	S	103	93	106	103	158	119	133	116
Sunland Park CY	C	...	...	491	402	309	183	1,448	503
SP-Desert View	C	...	...	...	...	...	...	481	398
Santa Teresa Xing	C	...	...	...	...	...	...	435	329

**Bold** = Exceeds federal standard of 150 ug/m3 (for values rounded to nearest 10 ug/m3)

Monitor Type: S = Sampler, normally run for 24 hr every 6th day  
C = Continuous, automated continuous sampling every day



## When Did Recent PM10 Exceedances Occur?

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Table 5 lists all the PM10 exceedances from April 1995 through June 1997. On some days, only one site recorded an exceedance. On other days, all of the sites that were operating that day recorded exceedances. Exceedances were most likely in February and March.

### DUST STORMS

NMED Air Quality Bureau staff have analyzed all the weather and other local conditions associated with exceedances that occurred between January 1995 and March 1997. Results were published in a report entitled "Analysis of PM10 Exceedances January 1995 - March 1997, Doña Ana County, New Mexico". This report concluded that most of the exceedances were due to blowing dust raised by high winds. Dust storms were especially severe in 1996 because of the extreme drought of late 1995 and early 1996.

### OTHER CAUSES

As indicated in Table 5, the Bureau's report attributed one exceedance at Chaparral and many at Santa Teresa Border Crossing to dust raised by adjacent construction activities. Two exceedances at Sunland Park City Yard were attributed to an industrial accident at the Asarco Smelter just across the state line in Texas.

# Ambient Air Quality Monitoring Data For Doña Ana County

for particulate matter less than 10 microns in diameter (= PM10)

**TABLE 5. PM10 MEASUREMENTS ON DAYS WITH EXCEEDANCES, APRIL 1995 THROUGH JUNE 1997**  
(Federal standard is 150 ug/m3, for values rounded to nearest 10 ug/m3)

24-hr average PM10 concentration in micrograms per cubic meter of air										
	LAS CRUCES ED	ROAD- RUNNER	HOLMAN	CHAPARRAL	ANTHONY	ANTHONY	SUNLAND PARK CY	SUNLAND PARK CY	S.P.- DESERT VIEW	SANTA TERESA XING
DATE	S	C	C	C	S	C	S	C	C	C
1995										
9-Apr	<std	ns	ns	ns	<std	310	158	309	ns	ns
5-May	ns	ns	ns	ns	ns	191	ns	ns	ns	ns
16-May	ns	ns	ns	ns	ns	175	<std	ns	ns	ns
22-May	ns	ns	ns	ns	ns	176	<std	<std	ns	ns
11-Jun	ns	ns	ns	ns	ns	215	ns	<std	ns	ns
22-Oct	ns	ns	ns	ns	ns	272	ns	183	ns	ns
1996										
17-Jan	ns	1065	806	ns	ns	1514	ns	1448	ns	ns
22-Jan	<std	<std	<std	ns	<std	<std	<std	235	ns	ns
10-Feb	ns	<std	<std	ns	ns	176	ns	<std	<std	<std
11-Feb	ns	<std	<std	ns	ns	478	ns	230	182	223
18-Feb	ns	399	<std	236	ns	<std	ns	160	<std	<std
22-Feb	ns	<std	<std	176	ns	ns	ns	<std	<std	<std
25-Feb	ns	<std	<std	<std	ns	246	ns	<std	<std	<std
26-Feb	ns	<std	<std	305	ns	<std	ns	405	216	219
28-Feb	ns	<std	<std	<std	ns	<std	ns	218	166	<std
13-Mar	ns	252	382	330	ns	490	ns	400	309	205
17-Mar	ns	212	239	296	ns	162	ns	299	<std	166
23-Mar	ns	<std	191	803	ns	447	ns	483	451	435
25-Mar	ns	<std	<std	<std	ns	<std	ns	207	<std	<std
26-Mar	ns	<std	<std	<std	ns	<std	ns	177	189	265
29-Mar	ns	277	252	532	ns	305	ns	503	398	329
13-Apr	ns	264	265	224	ns	<std	ns	<std	<std	ns
28-Apr	ns	<std	<std	<std	ns	198	ns	<std	<std	<std
13-May	ns	ns	<std	<std	ns	<std	ns	236	<std	194
6-Jun	ns	<std	189	<std	ns	<std	ns	<std	<std	<std
7-Jun	ns	<std	<std	<std	ns	ns	ns	219	182	171
24-Jun	ns	<std	<std	<std	ns	<std	ns	164	172	<std
26-Jul	<std	<std	<std	*176	<std	<std	<std	<std	<std	<std
3-Oct	ns	<std	<std	<std	ns	<std	ns	<std	<std	*294
18-Oct	ns	<std	<std	<std	<std	<std	<std	<std	<std	*268
21-Oct	ns	<std	<std	<std	ns	196	ns	<std	<std	*201
25-Oct	ns	<std	202	260	ns	267	ns	218	268	*215
10-Nov	ns	<std	<std	<std	ns	<std	ns	**157	<std	<std
11-Nov	<std	<std	<std	<std	<std	<std	ns	**158	<std	<std
16-Nov	ns	<std	<std	252	ns	190	ns	<std	<std	<std
27-Nov	ns	<std	<std	<std	ns	<std	ns	<std	<std	*181
1997										
3-Jan	ns	<std	<std	227	ns	<std	ns	<std	<std	ns
12-Jan	ns	<std	<std	<std	ns	<std	ns	<std	<std	*594
13-Jan	ns	<std	<std	<std	ns	<std	ns	<std	<std	*360
6-Feb	ns	<std	<std	<std	ns	214	ns	<std	<std	*162
24-Feb	ns	<std	194	<std	ns	192	ns	227	492	*967
25-Feb	ns	<std	<std	<std	ns	<std	ns	<std	<std	*183
28-Feb	ns	<std	<std	<std	ns	<std	ns	190	295	*360
14-Mar	ns	<std	<std	<std	ns	<std	ns	<std	<std	*215
24-Mar	ns	<std	155	<std	ns	157	ns	<std	<std	<std
25-Mar	ns	<std	<std	<std	ns	158	ns	<std	<std	<std
30-Mar	ns	<std	<std	<std	ns	<std	ns	<std	<std	*179
9-Apr	ns	<std	<std	<std	ns	<std	ns	<std	225	*185
10-Apr	<std	<std	<std	324	<std	298	<std	315	438	*423
24-Apr	ns	<std	<std	201	ns	244	ns	428	534	*579
9-May	ns	<std	<std	<std	ns	168	ns	<std	<std	*164

NOTES: ns = no sample

<std = less than 150 (for values rounded to nearest 10)

Monitor Type: S = Sampler, sample collection usually not every day

C = Continuous: automated continuous sampling, usually every day

Data Flags: all values shown = high wind flag, except

\*\* = industrial accident

\* = adjacent construction

## Annual Average PM10 Levels

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Table 6 gives the annual mean PM10 concentration. The federal standard states that the annual mean, averaged over 3 years, should not exceed  $50 \mu\text{g}/\text{m}^3$ . Annual averages greater than this value are therefore of concern.

Table 6 gives values for the arithmetic mean calculated in two ways: 1) using all the days with measurements ("including flagged days"), and 2) excluding days which had high values because of natural events (such as high wind), industrial accidents or nearby construction activities. As described earlier, the NMED Air Quality Bureau has issued a report in which all exceedances of the 24-hr standard ( $150 \mu\text{g}/\text{m}^3$ ) during January 1995 through March 1997 have been attributed to high wind events (dust storms), an industrial accident, or construction near the monitor. Following standard procedures specified in federal rules, the Air Quality Bureau has "flagged" these data in EPA's database to indicate that they should be excluded from determinations of nonattainment status for both the 24-hr and annual PM10 standards. EPA will make a determination on whether these data can be excluded after they examine the Air Quality Bureau's report analyzing these exceedances.

Some things to notice about the data in Table 6 are:

- 1) Annual average PM10 concentration has been consistently higher in the south county area than in the Las Cruces area;
- 2) No site has yet violated the annual standard (3-yr average above  $50 \mu\text{g}/\text{m}^3$ ), but several have had annual means greater than  $40 \mu\text{g}/\text{m}^3$ ;
- 3) Whether or not flagged days are excluded could eventually make a difference in attainment status for the south county area; in 1996, 4 of the 5 south county sites exceeded the  $50 \mu\text{g}/\text{m}^3$  level if flagged days were included;
- 4) If EPA allows the exclusion of flagged days, only the Anthony site would have exceeded the standard in 1995 and 1996 (Anthony is currently nonattainment for the 24-hr standard because of exceedances that occurred in 1988-1990).

Ambient Air Quality Monitoring Data For Doña Ana County  
for particulate matter less than 10 microns in diameter (= PM10)

**TABLE 6. ANNUAL MEAN PM10 CONCENTRATION**

Federal standard is 50 ug/cm3 averaged over three years

Site	Monitor Type	Annual Arithmetic Mean							
		Including Flagged Days				Excluding Flagged Days			
		1993	1994	1995	1996	1993	1994	1995	1996
LAS CRUCES AREA									
Las Cruces ED	S	21	22	24	24	21	22	24	24
Roadrunner Blvd.	C	...	...	...	34	...	...	...	28
Holman Rd.	C	...	...	...	36	...	...	...	30
SOUTH COUNTY AREA									
Chaparral	C	...	...	...	56	...	...	...	41
Anthony	S	37	41	40	38	37	40	40	38
Anthony	C	...	...	57	68	...	...	55	56
Sunland Park CY	S	32	37	40	38	32	37	39	38
Sunland Park CY	C	...	...	47	62	...	...	46	49
SP-Desert View	C	...	...	...	55	...	...	...	46
Santa Teresa Xing	C	...	...	...	44	...	...	...	35

Monitor Type: S = Sampler, normally run for 24 hr every 6th day  
C = Continuous, automated continuous sampling every day

## Pollutant Standard Index (PSI) — A System for Describing Air Health Quality

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For most people, air quality monitoring is useful when it answers the question "How healthful (or unhealthful) is the air?" The Pollutant Standard Index (PSI) system is used nationwide for reporting air pollution levels in terms of health quality.

TABLE 7. PSI LEVELS IN RELATION TO PM10 CONCENTRATION.

PM10 Concentration $\mu\text{g}/\text{m}^3$	PSI Values	PSI Descriptor
Up to 50	Up to 50	Good
50 to 150	50 to 100	Moderate
150 to 350	100 to 200	Unhealthful
350 to 420	200 to 300	Very Unhealthful
Over 420	Over 300	Hazardous

General health effects and cautionary statements associated with different levels of the Pollutant Standard Index are given in Table 8.

TABLE 8. HEALTH EFFECTS AND CAUTIONARY STATEMENTS FOR PSI LEVELS

PSI Descriptor	PSI Values	General Health Effects	Cautionary Statements
Good	Up to 50	None for the general population.	None required.
Moderate	50 to 100	Few or none for the general population.	None required.
Unhealthful	100 to 200	Mild aggravation of symptoms among susceptible people, with irritation symptoms in the healthy population.	Persons with existing heart or respiratory ailments should reduce physical exertion and outdoor activity. General population should reduce vigorous outdoor activity.
Very Unhealthful	200 to 300	Significant aggravation of symptoms and decreased exercise tolerance in persons with heart or lung disease; widespread symptoms in the healthy population.	Elderly and persons with existing heart or lung disease should stay indoors and reduce physical activity. General population should avoid vigorous physical activity.
Hazardous	Over 300	Early onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy persons. At PSI levels above 400, premature death of ill and elderly persons may result. Healthy people experience adverse symptoms that affect normal activity.	Elderly and persons with existing diseases should stay indoors and avoid physical exertion. At PSI levels above 400, general population should remain indoors, keeping windows and doors closed, and minimize physical exertion.

## PSI Values for PM10 in 1996

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These graphs show the percentage of measured days during 1996 in each of the five PSI categories ("Good", "Moderate", and so forth). In these graphs, PSI categories for air quality are given only in relation to PM10 — that is, other pollutants were not considered, as they would be if a measure of overall quality was presented.

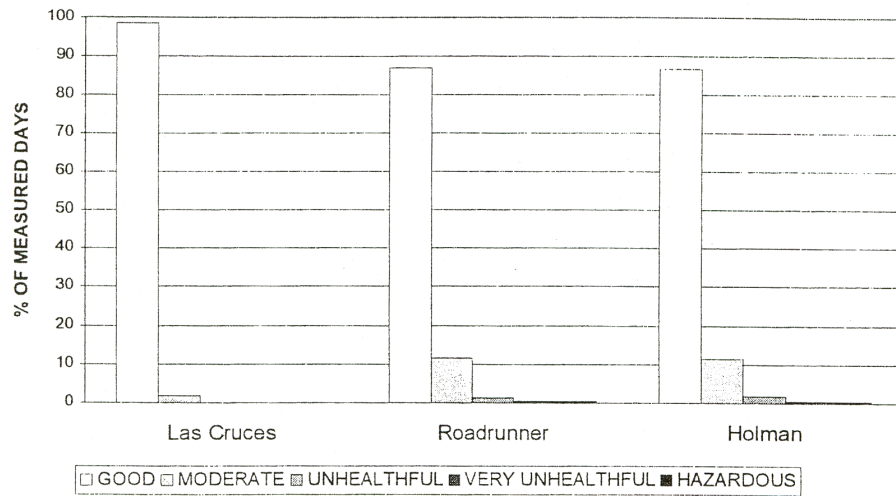
These graphs show:

- a) Air quality was healthful (Good or Moderate) on the great majority of days at all sites;
- b) Las Cruces area sites, with over 85% Good days, had better air quality than the south county sites;
- c) Anthony and Sunland Park sites had fewer Good and more Moderate days than the other sites.

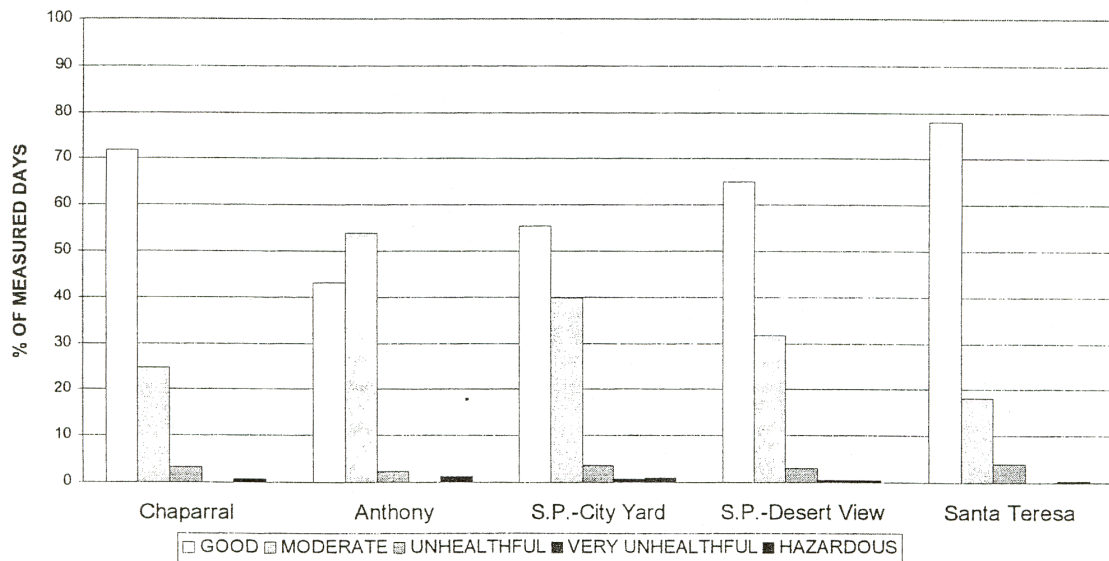
The high percentage of Moderate days (PM10 levels between 50 and 150  $\mu\text{g}/\text{m}^3$ ) at Anthony and Sunland Park is the main reason for their high annual average PM10 level, as shown previously in Table 6. Some of the Moderate days may have resulted from stagnant air conditions trapping smoke, soot and dust generated in the nearby El Paso-Juarez area. Other Moderate days may have resulted from high wind events (dust storms) that raised PM10 levels, but not to the 150  $\mu\text{g}/\text{m}^3$  level used in selecting possible days for flagging as high wind events. Further analysis may be needed.

## PM10 AIR QUALITY IN 1996

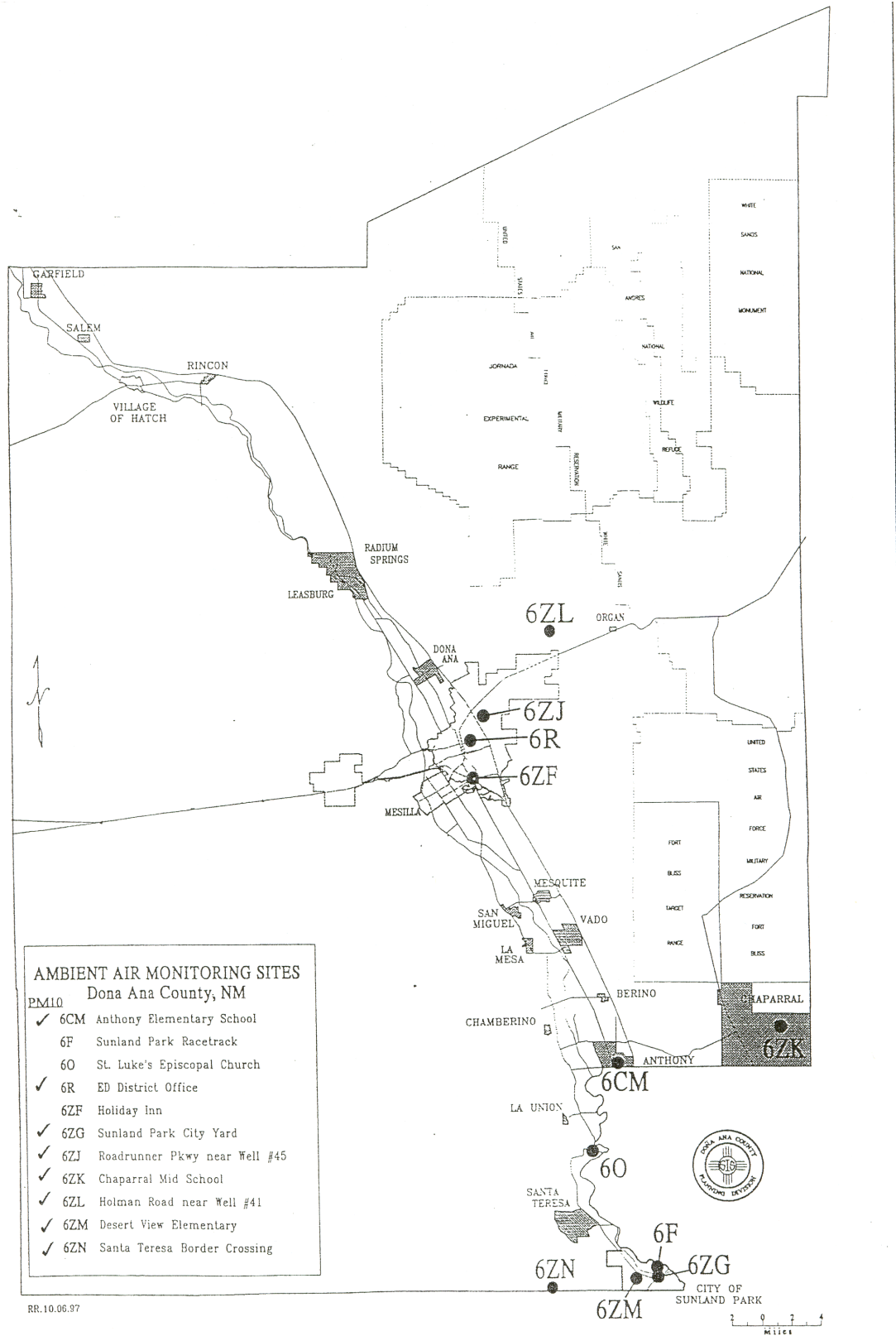
### LAS CRUCES AREA

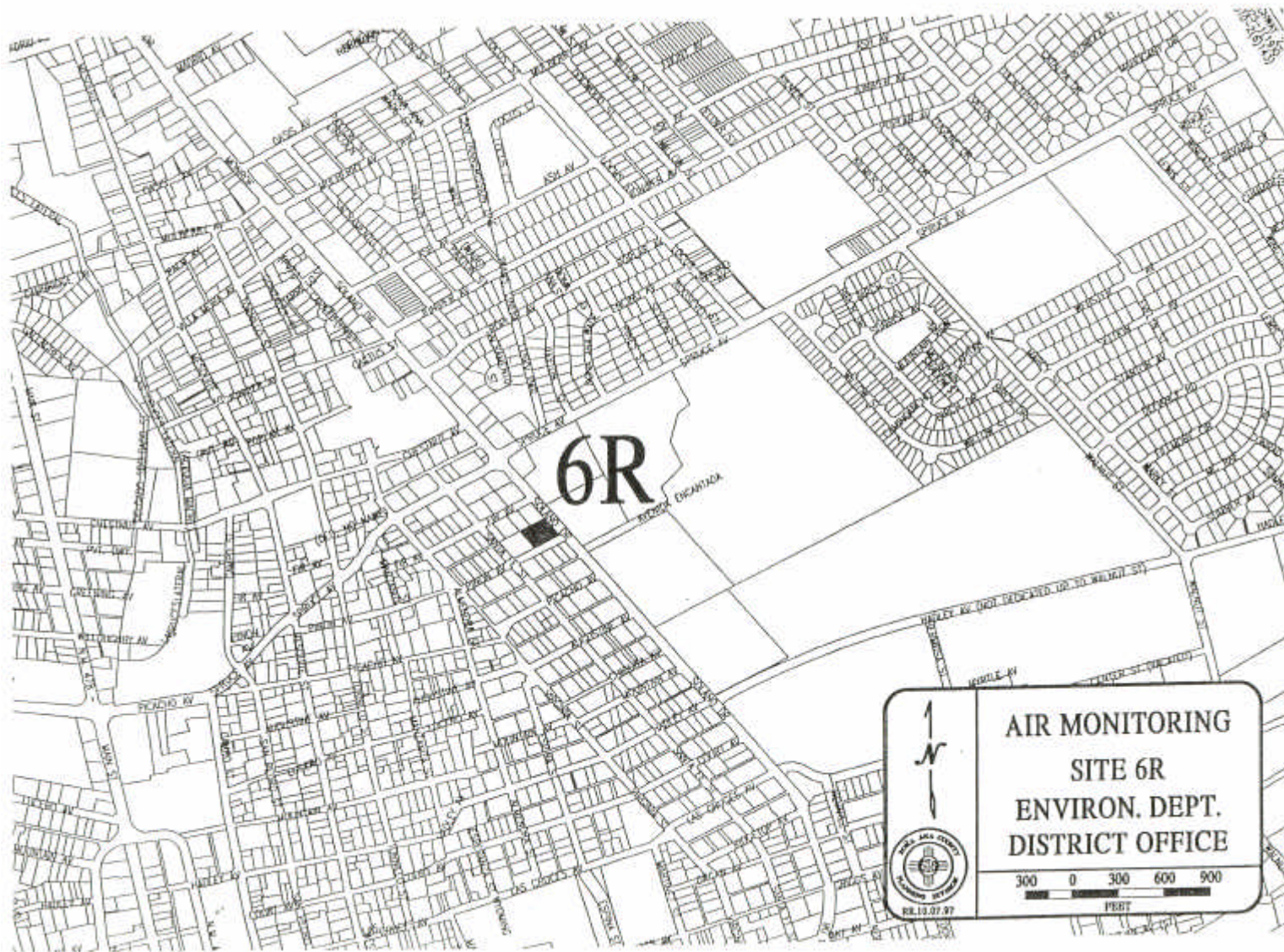


### SOUTH COUNTY AREA








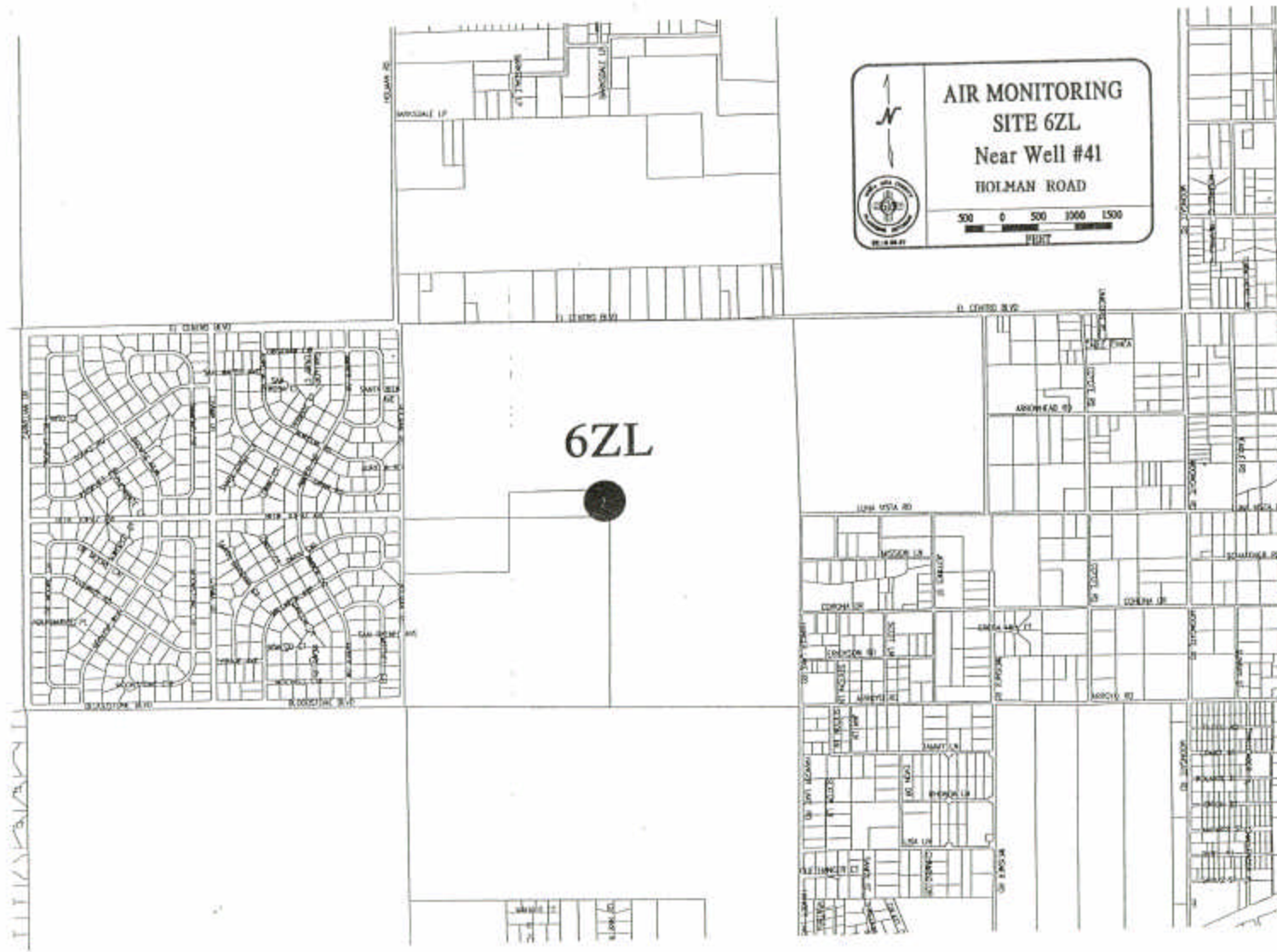


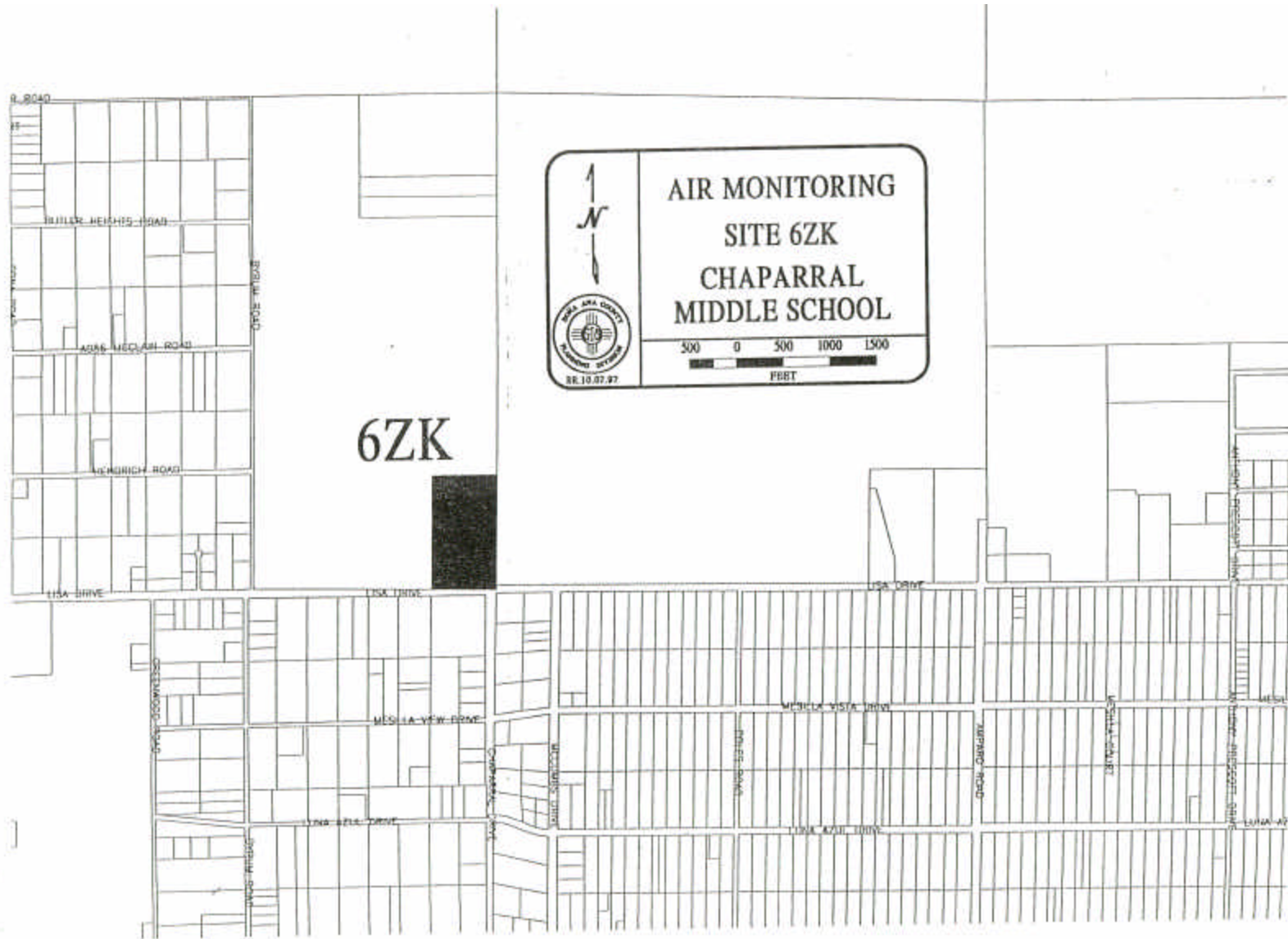




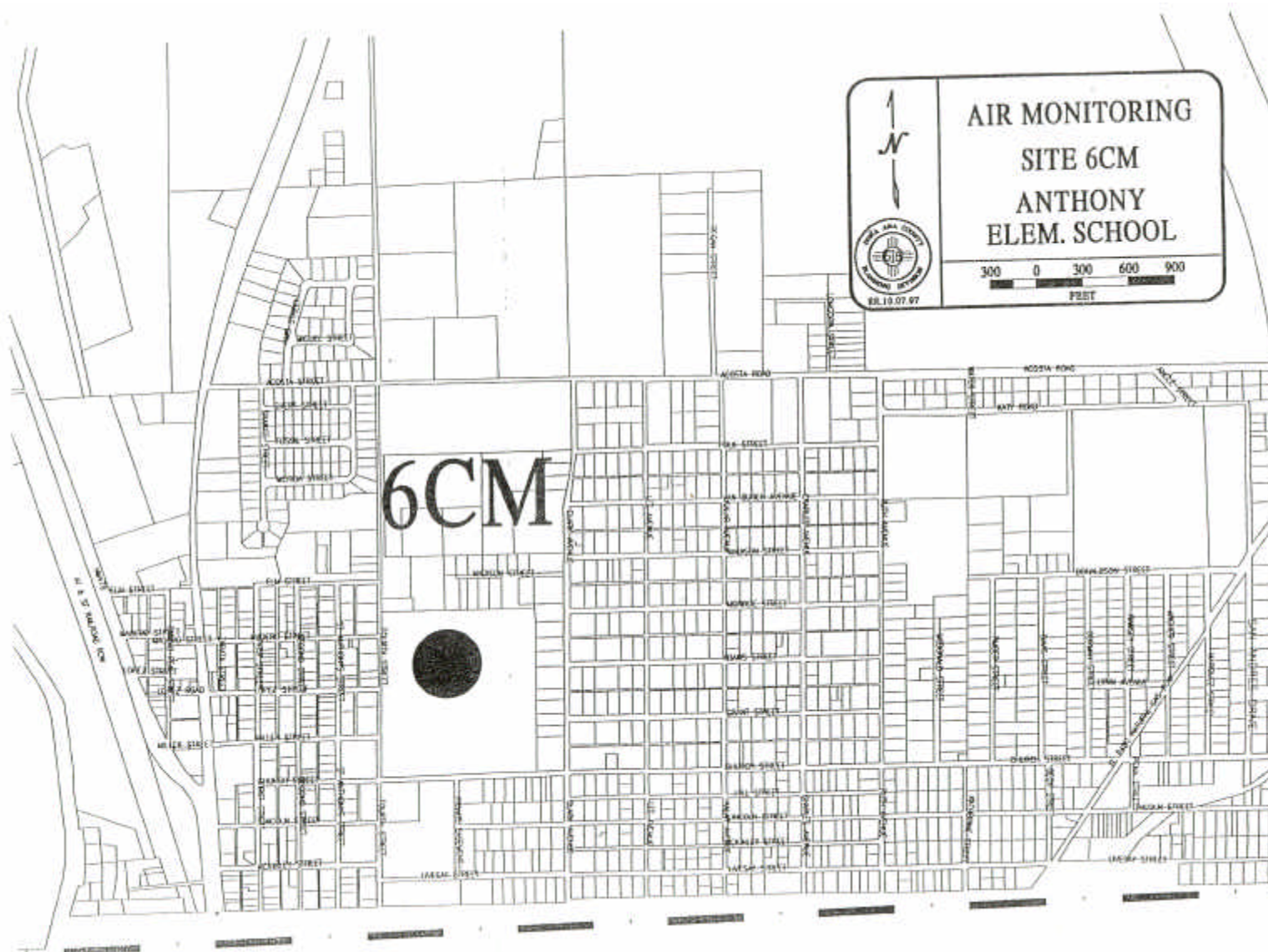
AIR MONITORING  
SITE 6ZJ  
Near Well #45  
ROADRUNNER

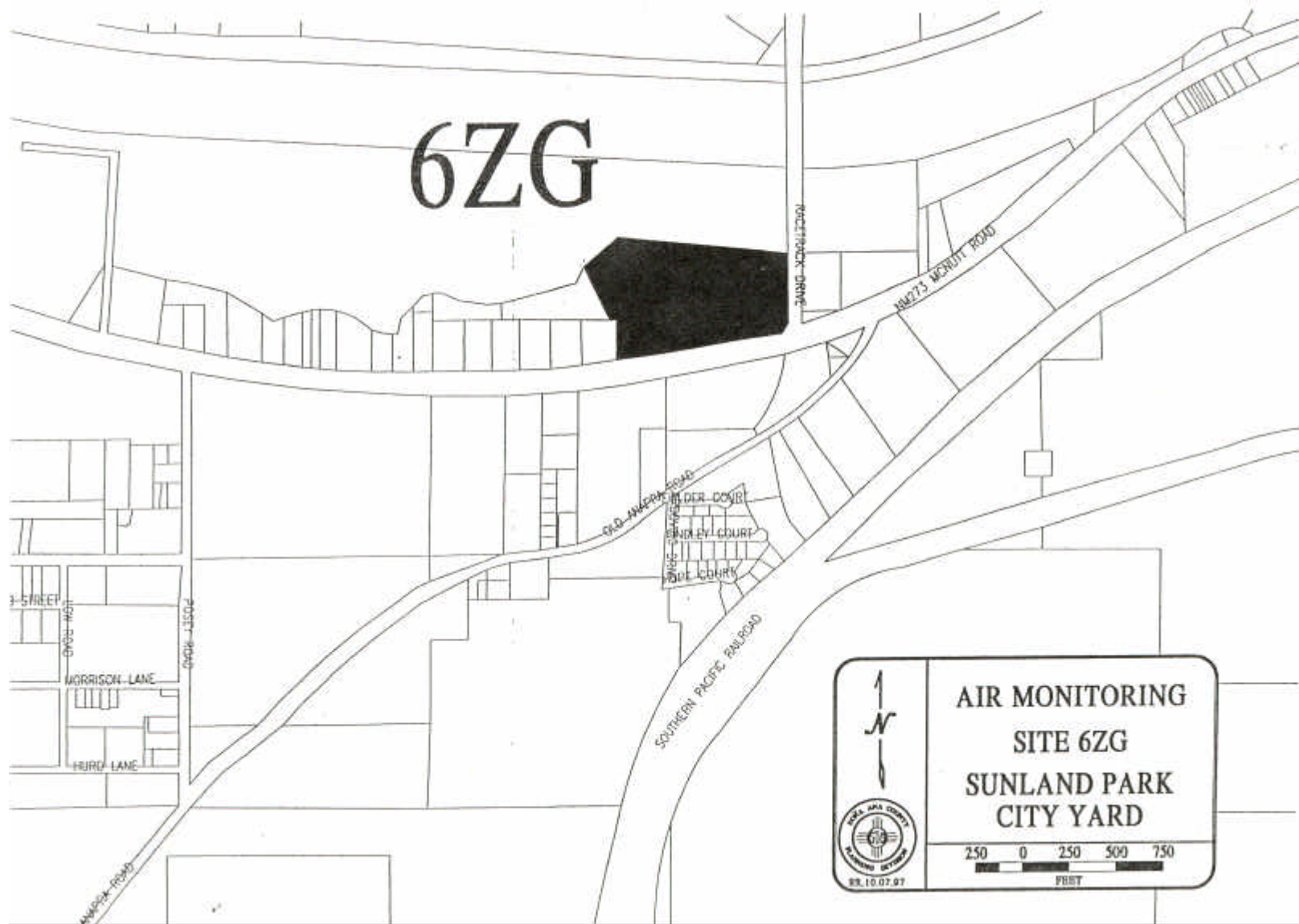
400 0 400 800 1200  
FEET









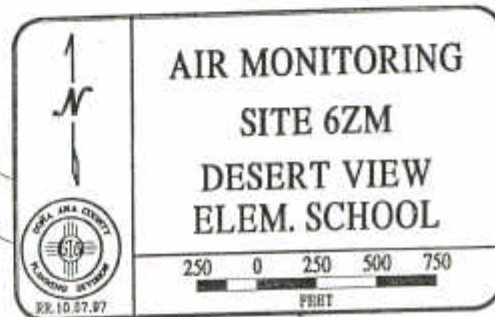


6ZM



AIR MONITORING  
SITE 6ZM  
DESERT VIEW  
ELEM. SCHOOL

250 0 250 500 750  
FEET

RR 10.17.97





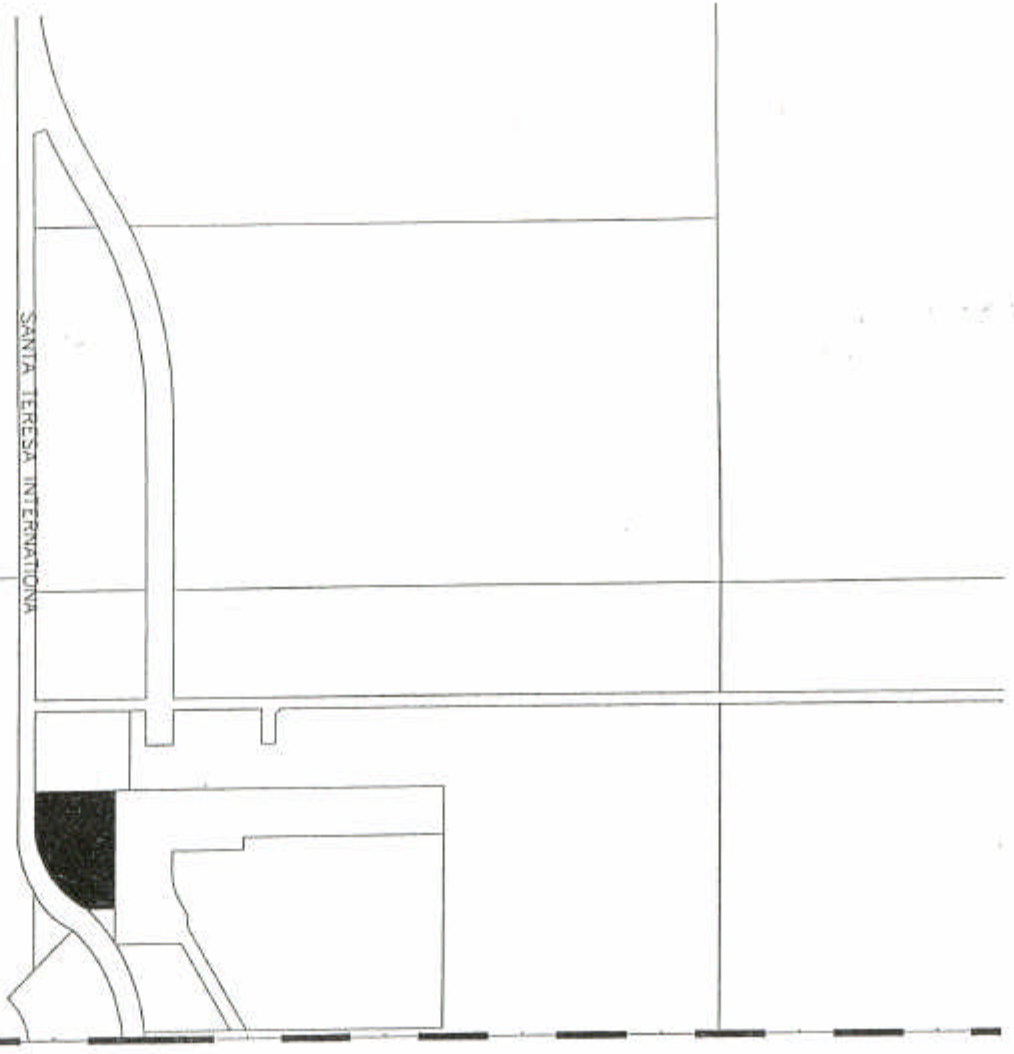


DAVAO AREA OFFICE  
PHILIPPINE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
RR. 10.07.97

AIR MONITORING  
SITE 6ZN  
SANTA TERESA  
BORDER CROSSING

500050010001500

FEET





+ Peter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

FEB 23 1998

Ms. Cecilia Williams  
Bureau Chief  
Air Quality Bureau  
New Mexico Environment Department  
1190 St. Francis Dr.  
PO Box 26110  
Santa Fe, New Mexico 87502-6110

Dear Ms. Williams

Thank you for your letter of November 26, 1997, submitting the Natural Events Action Plan (NEAP) for Dona Ana County. We acknowledge the NEAP submittal and the follow-up conference call providing updated information on February 9, 1998, indicate positive steps are taking place for further development of an acceptable Action Plan for Dona Ana County.

The Action Plan included an Executive Summary of the Plan, a general background on the Particulate Matter Standards, a summary of the Environmental Protection Agency (EPA) Natural Events Policy with some minor editorial statements, and a one page summary for implementing the Action Plan for Dona Ana County. Two attachments were also included in the submittal. The first attachment entitled, "Analysis of PM10 Exceedances January 1995-March 1997" provided our Air Quality Analysis Section the supporting documentation by which data was flagged. We understand the Air Quality Analysis Section will be continuing to work with you on the appropriate means for flagging and documenting future data. Attachment 2, "Summary of PM10 Monitoring Data" for Dona Ana County was also provided.

I am enclosing a matrix we developed during our review that outlines our analysis of the NEAP. This matrix evaluates New Mexico's commitments against the five commitments required for an acceptable NEAP and includes the results of our evaluation. This matrix should assist in NMED's effort to finalize a comprehensive Action Plan.

As required by Section 172(e) of the Clean Air Act, EPA is developing national guidance that will promulgate requirements

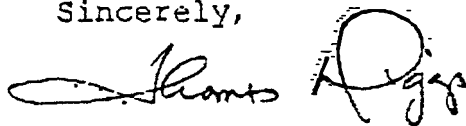
for all areas that did not attain the PM-10 standards at the date of promulgation of the new PM standards. As you may already be aware, Section 172(c) applies when the Administrator relaxes any of the National Ambient Air Quality Standards. Section 172(c) states the EPA "Administrator shall, within 12 months after the NAAQS relaxation, promulgate requirements applicable to all areas which have not attained the standard as of the date of the relaxation. Such requirements shall provide for controls which are not less stringent than the controls applicable to areas designated nonattainment before such relaxation."

The Natural Events Policy allows data to be discounted and avoids redesignations to nonattainment if the State can demonstrate the exceedances were due to natural events, however, it will also be necessary that an acceptable NEAP be in place in order for the SIP provisions of 172(e) to not apply.

Since we had the commitment to receive the NEAP from New Mexico by November 30, 1997, we were not anticipating the potential for Dona Ana being subject to the 172(e) requirements. We anticipate it will be necessary to receive an acceptable NEAP before the publication of the proposed 172(e) requirements which is targeted for late April, in order to avoid additional 172(e) requirements. We will keep your staff apprised of timing for the publication of these requirements, or any change associated with areas having or developing NEAPS.

If you and your staff have any questions on our evaluation of the NEAP, or have any questions on our matrix analysis, we stand ready to assist in whatever way necessary. Your staff may contact Ms. Petra Sanchez at (214) 665-6686 to further coordinate this effort. I may be reached at (214) 665-7214.

Sincerely,



Thomas H. Diggs  
Chief  
Air Planning Section (6PD-L)

Enclosure

cc: Mr. Brad Musick

*ADDENDUM*

*TO*

NATURAL EVENTS ACTION PLAN (NEAP)  
FOR PM10 EXCEEDANCES DUE TO HIGH WIND EVENTS  
IN DOÑA ANA COUNTY

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Air Quality Bureau  
New Mexico Environment Department  
P.O. Box 26110  
Santa Fe, NM 87502

April 3, 1998

## INTRODUCTION

On May 30, 1996, the Environmental Protection Agency (EPA) issued the Natural Events Policy in a memorandum from Mary D. Nichols, Assistant Administrator for Air and Radiation. In this memorandum, EPA announced its new policy for protecting public health when the National Ambient Air Quality Standards (NAAQS) for PM10 (particulate matter less than 10 microns in diameter) are violated due to natural events. The policy sets forth requirements that must be met in order for EPA to exclude exceedances of the standard due to natural events from determinations of attainment status.

In Doña Ana County, New Mexico, numerous exceedances of the 24-hr NAAQS concentration limit for PM10 were recorded during 1994-1997 by monitors operated by the Air Quality Bureau (AQB) of the New Mexico Environment Department (NMED). Because the number of days with exceedances was more than the number allowed by the standard, the county is in violation of the PM10 NAAQS. The Air Quality Bureau's analysis of wind data and other information regarding conditions during the exceedances indicated that all but a few were caused by high winds, which lift and carry dust from areas of exposed dry soil. Since high wind events are a type of natural event covered by the Natural Events Policy, the NMED/AQB is seeking to fulfill requirements set forth in the policy.

One requirement of the Natural Events Policy is that the state air quality agency must submit a Natural Events Action Plan (NEAP) to EPA by November 30, 1997. The NMED/AQB submitted to EPA Region VI a Natural Events Action Plan for Doña Ana County dated November 25, 1997. EPA Region VI evaluated the Doña Ana County NEAP and indicated, in a letter dated February 23, 1998, that additional information should be provided by NMED/AQB in order to finalize a comprehensive plan. The purpose of this Addendum is to provide the additional information requested by EPA Region VI.

## NEAP ELEMENTS

Following is a list of the five required elements of the Natural Events Action Plan, and the New Mexico commitments in regard to each element. The Discussion sections describe progress to date and anticipated future steps in development and implementation of the NEAP.

### **Element 1. Establish public notification and education programs.**

**New Mexico Commitment:** New Mexico will establish public notification and education programs by year end 1998.

### **Discussion**

These programs will inform the public that exceedances of federal health standards have occurred and that such exceedances have adverse health effects, particularly for susceptible individuals. Educational programs will also explain the health advisories (see #2 below) and will recommend precautions to be taken when dust levels are high.

A Health Issues Working Group has been convened to develop proposals for public education materials and programs. This group was co-convened by representatives of the Environment Department and the Health Department's District Office located in Las Cruces. The group includes representatives of local government, locally-based Health Department staff with expertise in public health education, key local health care providers including school nurses, and a public health advocacy group (see attached list of members).

The task of this working group is to develop draft educational materials (e.g., brochures) and proposals for outreach programs. NMED intends to present these drafts and proposals to the public at large for review and comment. NMED intends to make special efforts to seek and incorporate suggestions from those who would most need to receive the information (i.e., susceptible population segments) and those, such as teachers and nurses, who would be most directly involved in taking precautionary actions or communicating the information.

Information about PM10 health effects, measured exceedances, and the Natural Events Action Plan will be disseminated through a variety of media. Media suggested by the working group include brochures, public service announcements, press releases (preceded by direct outreach to news outlets), and various Internet web sites, including those of the Environment Dept., State Climatologist, and local governments. The working group will explore the feasibility of using these media and present its proposals to a wider group of stakeholders and the general public for review and comment.

To fulfill EPA grant commitments, the Environment Department currently issues press releases listing the PM10 exceedances for the previous quarter. This information has not been published by the local news media. NMED therefore intends to make a greater effort to contact and educate the local media and to write NEAP-related press releases that will be more likely to be published. NMED intends to seek the cooperation of local media in publishing of previous day(s) Pollutant Standard Index (PSI) levels for PM10, as a means of heightening public awareness of the problem.

## **Element 2. Minimize public exposure to high concentrations of PM10 due to future natural events.**

**New Mexico Commitment:** By year end 1998, New Mexico will establish a system to enable susceptible individuals and their caretakers to minimize their exposure to high concentrations of PM10 during dust episodes .

### **Discussion**

EPA's Natural Events Policy states that advisories should inform the public that a dust episode is imminent, or currently taking place, or likely to occur. The working group on health issues has questioned both the feasibility and effectiveness of warnings of imminent or ongoing dust episodes, which would be based on either weather forecasts or real-time measurements. The working group noted that dust storms, unlike for example elevated levels of carbon monoxide, are readily observable by the public. The group therefore suggested an alternative, common-sense

approach based largely on public education. The public education campaign would include the following information:

- (1) episodes of unhealthful dust levels are likely to occur in this area, especially during the windy season of late winter and early spring;
- (2) individuals should take precautionary measures when they see that a dust storm is in progress;
- (3) precautionary measures include staying indoors with windows closed and avoiding outdoor exercise and activities during dust storms;
- (4) individuals who wish to become better able to distinguish unhealthful levels of dust may consult the previous day(s) PSI values for PM10, as published in the media, and compare this with their perception of dustiness.

The working group investigated and rejected two other options: 1) issuance of advance warnings of dust episodes based on the National Weather Service's issuance of high wind advisories or high wind warnings, as is done in Clark Co., Nevada, and 2) basing advisories on real-time data from continuous dust monitors. The group rejected these options because such warnings or advisories would often be in error, resulting in loss of credibility for the entire education program and failure of individuals to take precautions to protect health.

The consensus of the working group was that most people, in deciding whether they should take precautions, would base their actions on their direct observations of dustiness and would discount any official advisory (or absence of same) if it was contradicted by their observations. A public education campaign was recommended as a means of heightening awareness of the health hazards of high dust levels and informing susceptible individuals and their caregivers what precautions they should take when dust levels are high.

The working group proposed that the public education campaign should consist of the following elements:

- a) a brochure, in English and Spanish, explaining the health hazards of high dust levels and describing ways to reduce one's exposure (attached is a draft version currently in review) ;
- b) a dust health advisory to be published monthly during the spring windy season as a paid advertisement in the Las Cruces daily newspaper;
- c) publication of PSI levels for PM10 in the news media; such publication would not only heighten awareness generally, but would help susceptible individuals and their caregivers in "calibrating" their visual observations of dustiness so that they could better distinguish unhealthful levels.

NMED is currently investigating the feasibility of various methods for distributing this information to the public. One possible method, which has been used successfully for other health advisories, is by inserts in electric utility bills. NMED will also seek the cooperation of local chapters of the American Association of Retired Persons in distributing brochures to the elderly. Public and private school administrators will be asked to distribute these materials to their staff,

parents and pupils. The working group suggested that public meetings to address the health issues be held in each of the three public school districts.

### **Element 3. Abate or minimize appropriate contributing controllable sources of PM10.**

**New Mexico Commitment:** Best Available Control Measures (BACM) will be implemented on appropriate anthropogenic sources by May 30, 1999.

#### **Discussion**

NMED is in the process of forming a Sources and Controls Working Group to address the issues of identifying human-caused sources and determining Best Available Control Measures for such sources. The group will consist of planning staff from the local governments, technical experts in civil engineering and wind erosion, and representatives from the construction industry and agriculture. NMED anticipates that the first meeting of the group will be in April 1998, and the work of the group will be largely complete by late Fall 1998.

The first task for the group will be to identify human-caused sources that contribute significantly to exceedances. Staff of the City of Las Cruces Planning Department are nearing completion of a preliminary inventory of fugitive dust emissions for the entire county. For this inventory, emissions are being calculated using formulas given by EPA guidance in AP-42 and other EPA publications. NMED intends to propose that the group consider using either of two alternative approaches to AP-42 methodology:

- a) develop an emissions estimation procedure based on current scientific understanding of dust entrainment during high wind events, or
- b) develop a common-sense approach, based on considerations of source intensity and proximity to populated areas, for identifying sources most in need of controls.

The next task for this work group will be to identify candidate control measures and to evaluate the feasibility and probable effectiveness of these measures.

For sources on public land, implementation of control measures will be through agreements with the appropriate land management entity. NMED prefers that control measures for sources on private land be implemented by passage and enforcement of local ordinances. The City of Las Cruces has compiled a review of current and pending policies and regulations relating to dust control (see attached). This review identifies potential means for implementing new dust control measures within the City. For the West Mesa Industrial Park, another means of implementing control measures is through existing protective covenants (see attached) drawn up by the City of Las Cruces. NMED will encourage and assist local governments in drafting appropriate ordinances. NMED anticipates that by January 1999 we will have evaluated whether local ordinances are sufficient, and will bring the state Environmental Improvement Board for adoption any state regulations needed to fill gaps in implementation by local ordinance.



**Element 4. Identify, study and implement practical mitigating measures as necessary, for anthropogenic sources for which BACM are not defined.**

**New Mexico Commitment:** New Mexico will arrange for investigations of new emissions reduction techniques for anthropogenic sources for which BACM are not defined.

**Discussion**

As described in #3 above, the Sources and Controls Working Group will evaluate the feasibility and effectiveness of candidate control measures for dust emissions from anthropogenic sources. This group will determine if there are any sources for which BACM are not defined. In accordance with the Natural Events Policy, implementation of control measures will be as expeditious as practicable for sources for which BACM are undefined.

NMED and local stakeholders have tentatively identified two kinds of problems where additional studies may be needed. Both problems involve potential conflicts between commonly used methods of dust control and other environmental and health considerations.

(1) Weed Control: In this area, a common method of controlling weeds on vacant land is repeated mechanical disturbance of the soil by some sort of scraper. This prevents growth of a protective vegetation cover and destroys soil surface crusts, thus creating a surface likely to have a high emission rate and low wind threshold. Establishment of vegetation cover on such areas could have a net adverse effect on the health of asthmatics by creating sources of weed or grass pollen. Extensive herbicide use may have adverse environmental effects. Therefore, there may be a need to investigate alternative methods of weed control.

(2) Water Conservation: Many common methods of dust control require water use, either as a direct means of preventing dust entrainment or to support vegetation cover. However, increasing demands upon a limited water supply have prompted local governments to take measures encouraging local users to minimize their consumption of water. Efforts to identify dust control measures that use little or no water may be needed.

**Element 5. Periodically reevaluate the conditions causing violations of a PM10 NAAQS, the status of NEAP implementation, and the adequacy of the actions implemented at least every five years.**

**New Mexico Commitment:** New Mexico will perform such reevaluation by November 30, 2002.

**Discussion**

NMED's intention is to monitor progress in implementation throughout the next several years.

## STAKEHOLDER INVOLVEMENT

EPA's Natural Events Policy states that the NEAP should be developed by the State air pollution control agency in conjunction with the stakeholders affected by the plan. The NMED strongly emphasizes stakeholder involvement in development and implementation of the NEAP. Following is a description of NMED's efforts to involve stakeholders in designing and carrying out the plan.

The NMED has presented briefings on the PM10 problems in this county and on the NEAP to a number of stakeholders. Initially, emphasis has been given to bringing this issue before local policymakers. To date, the following groups have received briefings:

- 1) January 6, 1998    New Mexico Metropolitan Planning Organizations
- 2) February 6, 1998    South Central Council of Governments
- 3) March 4, 1998    Las Cruces Homebuilders Association
- 4) March 11, 1998    Las Cruces Metropolitan Planning Organization, Planning Committee (includes elected officials from City of Las Cruces, Town of Mesilla, and Doña Ana County)
- 5) March 23, 1998    City Council of Las Cruces, work session (briefing by City Planning Staff)

Doña Ana County, the City of Las Cruces, and the Town of Mesilla have endorsed and committed to participation in the NEAP process (see attachments). As described above, staff of these local governments have actively participated in the development of proposals by the Health Issues Working Group. In addition, City of Las Cruces staff completed the preliminary emissions inventory. NMED intends to seek support from other municipal governments within the county, although their level of participation may be limited because they lack the staff resources of the county and of Las Cruces.

NMED intends to take the initiative in communicating NEAP-related information to interested parties and in seeking their input. To this end, NMED is continuing efforts to actively seek representatives of a wide variety of stakeholder groups for inclusion in the distribution list for NEAP-related information. NMED will continue to add to this list as other interested parties are identified. NMED envisions that materials to be sent could include periodic newsletter-like updates on NEAP-related matters, including recent exceedances, proposed education materials, results of studies, and the Air Quality Bureau's report on air quality in the state (*New Mexico Air Quality, 1994-1996* — see attached), which includes information on PM10 exceedances and the NEAP. Many stakeholders and interested parties on our distribution list have already been sent the NEAP submittal dated Nov. 25, 1997, with its Attachments 1 and 2.

## *ATTACHMENTS*

1. Members, Advisory Committee on Health Issues
2. Abstract, "Association of Ambient Air Quality and Acute Respiratory Pediatric Morbidity: A Binational Effort on the U.S. Mexico Border", by J. VanDerslice *et al.*
3. Draft Brochure: "Dust Storms: What Everyone Should Know"
4. Letter L-98-145, from David Carpenter (Las Cruces City Planning) to Brad Musick (New Mexico Air Quality Bureau)
5. Las Cruces City Council Resolution No. 98-294
6. Letter dated March 19, 1998, from Fernando Macias (County Manager, Doña Ana County) to Brad Musick (New Mexico Air Quality Bureau)
7. Letter dated March 23, 1998, from Michael Cadena (Mayor, Town of Mesilla) to Brad Musick (New Mexico Air Quality Bureau)